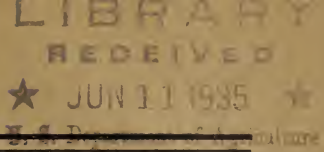


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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL ADJUSTMENT ADMINISTRATION

AN ECONOMIC SURVEY
OF THE
BABY CHICK HATCHERY INDUSTRY



ISSUED MAY 1, 1935

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL ADJUSTMENT ADMINISTRATION

AN ECONOMIC SURVEY
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BABY CHICK HATCHERY INDUSTRY

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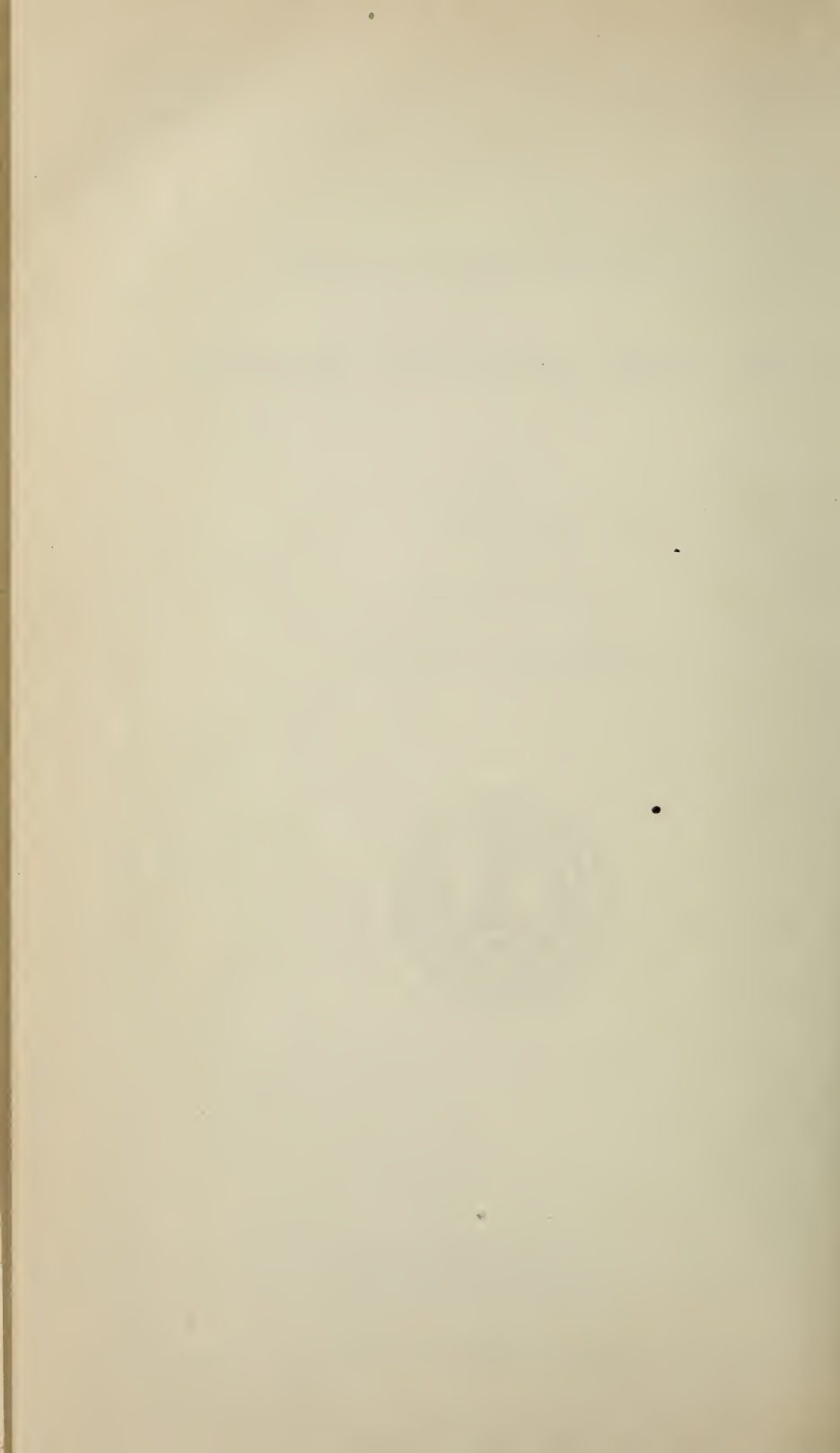
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AN ECONOMIC SURVEY OF THE BABY CHICK HATCHERY INDUSTRY

INTRODUCTION

PURPOSE OF THE STUDY

Within the last quarter of a century, the hatchery industry has advanced to a prominent position in American agriculture. Modern methods of poultry management have made the poultry raiser increasingly more dependent upon hatcheries for his supply of baby chicks. Consequently, the development and economic status of the hatchery industry has become of great importance to poultrymen.

This important industry, following a wave of mushroomlike growth just before the depression of 1929, was very adversely affected by the economic crisis. Many thousands of chicks, for which there was no active demand, were hatched each month during the hatching season. This condition gave rise to all the common evils of cut-throat competition, accompanied by unscrupulously misleading advertising. As a result of frantic efforts to meet this cut-throat competition, prices were slashed and the quality of chicks lowered. Poultry producers purchasing chicks from hatcheries were frequently deceived and defrauded.

The International Baby Chick Association, a trade organization of hatcheries in the United States, and the Northeastern Poultry Producers Council, recognizing the necessity for improving existing conditions in the industry, took advantage of the opportunity which was presented by the National Industrial Recovery Act to sponsor a code of fair competition which was designed, among other things, to eliminate the existing unfair competitive practices. This code, officially known as the Code of Fair Competition for the Commercial and Breeder Hatchery Industry, was signed by the President of the United States on December 27, 1933, and became a law on January 1, 1934.

In accordance with an Executive order regarding codes for agricultural industries, the National Industrial Recovery Administration was charged in general with the responsibility of administering those sections of the code dealing with labor provisions, while the Agricultural Adjustment Administration was made responsible for the administration of the unfair trade practice provisions. In administering this code there arose many difficulties which could not be dealt with adequately because of insufficient factual information concerning the hatchery industry and its operations.

This study was undertaken with the object of obtaining such economic information concerning the hatchery industry, and its relation to the poultry industry as a whole, as would be useful to the Agricultural Adjustment Administration in its efforts to restore poultry and egg prices to parity. Accurate information on the industry would be of considerable value in the enforcement of the various

provisions contained in the code and would aid in determining the effect of the code on the interests of egg and poultry producers. Furthermore, information obtained in the study should be of interest and value to individual hatchery operators. It should enable them to compare their costs of operation with average costs for similar hatcheries, and the operations of their business with comparable hatcheries and the industry as a whole. Thus it would assist them in improving their business methods. Still more important, it was believed that the information obtained from this study would help to guide chick buyers in making more satisfactory purchases of hatchery products.

SCOPE OF STUDY

The mailing list of the National Commercial and Breeder Hatchery Coordinating Committee, as of July 1, 1934, contained the names of 13,405 members of the hatchery industry. Of this number, 1,658 were listed as dealers and 342 did not state their incubator capacity. Detailed analysis of this study was therefore based on the remaining 11,405 hatcheries listed by the coordinating committee which showed the egg setting capacity of their incubators. The section of the study which deals with the geographical distribution of the hatchery industry includes, without exception, all of these 11,405 establishments.

The study of the interstate character of the industry was based on questionnaires¹ which were sent to every sixth hatchery included in the list. Replies were received from 717 firms which represents 30.5 percent of the hatcheries to which questionnaires were sent. Five hundred and ninety-five replies, or 25.3 percent, were found usable in the sense that they contained adequate data. All calculations of the extent of interstate traffic in baby chicks were based on these 595 usable replies.

The information relating to functions of hatcheries, hatching efficiency, cost of hatching, and profits from hatching operations was based on another questionnaire² which was mailed to all the hatcheries on the mailing list. Approximately 34 percent of all the hatcheries to which questionnaires were sent replied to the request for information concerning their operations during the 1934 season. A larger percentage of replies was received from the smaller hatcheries than from the larger ones. However, the reports from the larger hatcheries were much more complete than those from the smaller ones. On the whole, 17.7 percent of the reports submitted were found to be usable. This sample represents 683 hatcheries or 6 percent of all firms listed on the mailing list.

LIMITATIONS AND ASSUMPTIONS

While the scope of this study is more comprehensive than that of any which have been made previously, there are necessarily several limitations to the figures reported and some assumptions which it has been necessary to make. One of the easily apparent limitations, for instance, is that some hatcheries operating in the United States were not included in the list of the coordinating committee. However, it is estimated that the number of hatcheries so excluded was very small. At any rate, this mailing list represented the best available count of hatcheries and their capacities in the United States.

¹ Appendix, Exhibit A, page 58.

² Appendix, Exhibit B, page 60.

Some of the other important limitations can be briefly summarized as follows:

1. It cannot be definitely said that the figures shown in this report are truly representative of all hatcheries. Every effort has been made to make the sample of reports as representative of existing conditions as possible. However, it is possible that those hatcheries which replied to the questions may have been operating under somewhat different conditions than some of the hatcheries which did not furnish any replies. Another possibility is that by selecting for analysis only usable replies, that is, more or less complete reports, a bias might have been introduced in favor of the more efficient hatcheries. Such hatcheries are not only more likely to be in a position to have complete records, but their costs of operation may also be rather lower than the average.

2. The small proportion of hatcheries which furnished usable replies is an indication of inadequate accounting records in the industry generally. Every effort was made to use only reports that were fairly accurate and complete, yet it is evident that some of the figures may still have contained error. For example, reports from small hatcheries may not have been as complete and accurate as those from larger ones. Many small operators who did not keep complete records may have forgotten about incidental items of expense such as telephone, postage, and additional family labor. Many hatcheries have difficulty in allocating expenses to their hatchery operations. In the case of hatcheries where the incubators are maintained in the basement of the home, for example, it is questionable what proportion of the rent should be charged to hatchery operations.

3. Although the commercial hatchery differs considerably in its type of operations from a breeder hatchery, the same report forms were submitted to all hatcheries. The forms used in this study were better adapted for commercial than for breeder hatcheries. The principal distinction between the two is that the commercial hatchery buys the eggs required for setting from other egg producers, and the breeder hatchery uses eggs supplied by its own flocks. To make it possible for both types of hatcheries to use the same form, the breeder hatcheries were asked to charge against their costs of operation the local market price of eggs supplied by their own flocks including whatever premiums such eggs may have commanded.

4. Frequently, hatcheries are operated as adjuncts to poultry farms and, in some cases, the owners are also engaged in other business activities. In such cases, it is often practically impossible for the owner to determine what part of his expenses should be charged against hatchery operations. Hence there may be a tendency to charge all or nearly all of the overhead expenses against the seemingly more important phase of his business.

ACKNOWLEDGMENTS

In the preparation of this study, very valuable assistance was received from many colleagues in the Department of Agriculture and from members of the National Commercial and Breeder Hatchery Coordinating Committee.

The tedious work of editing the reports and supervising the tabulation of questionnaires was undertaken by Mrs. Pauline Whoolery of the Poultry Section, Agricultural Adjustment Administration.

SUMMARY AND CONCLUSIONS

1. Hatcheries operate in every State of the Union, but the heaviest concentration of hatchery capacity exists in the States of Ohio, Indiana, Illinois, Missouri, Iowa, and Minnesota. In these States are located 33.5 percent of all the hatcheries in the United States. Their combined capacity is 43.8 percent of the total incubator capacity in the country.

2. Hatching capacity is unevenly distributed among the States. It is estimated that during the 1934 season hatcheries in some States produced over 140 chicks for every 100 chickens raised on farms, and in other States, less than 10. It appears that about half of all the chickens raised on farms in the United States are hatched by farmers themselves. It must be realized, of course, that the practice of hatching some chickens on farms will probably always continue. At the present time there is no evidence to indicate that there is need for any material expansion of commercial incubator capacity. However, there seem to be plentiful opportunities for efficient, wide-awake hatcherymen to develop potential new business without resorting to unscrupulous methods of competition.

3. For the country as a whole, 683 hatcheries obtained 81.2 percent of their total income from the sale of baby chicks, and 18.8 percent from all other activities such as custom hatching for hire, brooding chicks and selling them started, dealing in chicks purchased from other hatcheries, and selling hatching eggs, poultry feed, and various poultry supplies.

4. This study indicates that the average hatchability for the 683 hatcheries selected was 64.4 percent and that the average rate of capacity utilization was 2.7. It may be, however, that these figures are somewhat higher than the actual average hatchability and rate of capacity utilization because the sample may not be entirely representative of actual conditions existing among the 11,405 hatcheries. However, when similar averages were computed for a sample of 1,263 hatcheries, adding 580 other hatcheries to the original 683, these averages were hardly changed. For the 1,263 hatcheries, the average hatchability was 63.9 percent and the average rate of capacity utilization was 2.6. Many hatcheries, in fact, have a much lower percent of hatchability and rate of capacity utilization than the stated averages since there is a very wide range from hatcheries with the lowest to the ones with the highest percent of hatchability and rate of capacity utilization.

5. The percentage of hatchability and the rate of utilization of setting capacity are exceedingly important as factors determining the total cost of producing chicks. It would seem, therefore, that there are good possibilities for many hatcherymen to increase their efficiency by striving to obtain the highest possible number of chicks for every 100 eggs set, and by planning their business in such a manner that they will use the capacity of their incubators to the best possible advantage.

6. While cost reports were received from approximately 4,000 hatcheries, only 683 of them contained complete and accurate enough information to warrant their use. This clearly indicates the need for more adequate cost records in the hatchery industry.

In this connection, Secretary Wallace has written:

Undoubtedly every individual should know his cost as accurately as possible. If he does not know it, he cannot know whether he is going ahead or falling behind. * * * It is wise for the individual business man and the individual farmer to hold up before his eyes the motto, "Know your costs." He must of necessity keep continually posted on his own individual competitive ability.³

7. The most significant conclusion to which this analysis of hatchery production costs points is that the cost of producing chicks varies widely among the hatcheries. During the 1934 season, some hatcheries actually produced chicks at a cost of somewhat less than \$4.50 per 100, while others had costs exceeding \$14. This variation in costs cannot be completely explained either by the size or location of the hatcheries. Therefore, while it is possible to compute a mathematical average of costs for hatcheries in different sections and of different sizes, as well as for the country as a whole, and while such averages may be of considerable value for the purpose of comparing the efficiency of one hatchery with that of others, yet the limitations of such average costs must be clearly realized at all times.

8. This extreme variability of costs is particularly important when one considers the demands from different quarters for fixed prices based upon average costs of production. It clearly indicates the inherent difficulty involved in arriving at any fixed price which would be equitable to thousands of hatcheries operating under widely dissimilar conditions. To quote Secretary Wallace again:

No one has a divine right to cost of production. Moreover, cost of production is a false guide to prices over any long period of time. The true guide to prices is a concept based on that state of balance or ratios which make it possible for the economic organism to keep functioning with the least disturbance possible.

Cost of production looks too much toward the past. When an industry has been making large profits, it generally begins to pay its workers more and to spend money on improvements. In a new industry rapidly expanding, this may result in a decreasing cost of production. But after a time there is a tendency for cost of production to rise, simply because of the prosperity of the immediate past. In other words, if cost of production were recognized legally, there would be a tendency toward an ever ascending spiral of prices raised by increasing overhead.

* * * This tendency of cost of production to breed on itself makes it an exceedingly poor guide, from the standpoint of fixing prices, or balancing the national business structure.⁴

9. Egg cost represents from less than 30 to more than 60 percent of the total cost of producing chicks in different hatcheries. The egg cost per chick hatched varies with the price level of eggs in the different regions, the premium paid for eggs over current market price, and the hatchability of the eggs. The premium, to a large extent, represents the quality of eggs used and is, in turn, definitely reflected in the quality of chicks produced. Since the premiums paid for hatching eggs vary from nothing to as much as 35 cents per dozen, thus indicating a wide variation in the quality of chicks sold, it would be very surprising if some hatcheries did not have a considerably higher cost of producing chicks than others.

10. No systematic collection of baby chick prices has ever been undertaken by any State or Federal agency. As a result, there are no satisfactory historical price series available anywhere. Without such series, it has been impossible to make any analysis of the relationship between the supply and the price of baby chicks. Logically, it would

³ Henry A. Wallace, *New Frontiers*, ch. X, pp. 103-104.

⁴ *Ibid.*, ch. X, p. 103-104.

seem that there ought to be a very definite relationship between the number of chicks hatched and the price of chicks, and that as the price of baby chicks became very high, the demand for them would decrease materially. This follows from the fact that a poultry raiser, who is the ultimate consumer of baby chicks, almost always has the alternative of hatching such chicks as he may need himself, either by means of small, inexpensive incubators, or without the aid of artificial incubation at all. Therefore, if the price of hatchery-produced chicks, taking the quality factor into consideration, became considerably higher than the cost of hatching chicks on the farm, it would seem that the demand for hatchery chicks would drop. The information which would be furnished by a study of the relationship between supply and demand of baby chicks and prices would be exceedingly valuable to the industry.

11. The analysis of reports on which this survey is based indicates that during the 1934 season nine-tenths of all the hatcheries made at least some profit on their operations.

THE DEVELOPMENT AND PRESENT CHARACTER OF THE HATCHING INDUSTRY

HISTORICAL DEVELOPMENT OF THE INDUSTRY

Commercial hatching of chicks in the United States dates back to the 1880's. There were a number of reasons for its development at that time. Generally speaking, it rode in on the crest of a wave of general industrialization and mechanization of agriculture which began to develop in the middle eighties in response to a growing demand for agricultural products from abroad, and in order to feed a growing industrial population at home.

This period coincided with the growth of cities, with its resulting concentration of urban population, and the development of economical means of transportation. New and greater markets for poultry products became available, while economical transportation made it possible to move these products from the farms to the new markets and to the seaboard for shipment abroad.

All these factors combined made specialized poultry production profitable, and the tendency to abandon diversification in favor of concentrated and specialized production became more and more pronounced.

These tendencies explain why new and improved types of incubators began to appear on the market around the eighties. These incubators were designed to make commercial hatching possible, now that it was economically practical. The early incubators were crude forerunners of the present type of incubators. Gradually improvements were introduced making possible automatic and exact regulation of heat, humidity, and oxygen supply, permitting adaptability of modern incubators to a wide variety of conditions, and at the same time combining these features with simplicity and durability.

In the early nineties, commercial advertisements began to appear in poultry publications offering to deliver quantities of young chicks "distance no objection" at from 6 to 10 cents each.

Hatching operations, however, continued on a small scale until the appearance of mammoth incubators in 1908 and 1909. The appearance of these incubators resulted in a substantial increase in the

number of chicks hatched commercially, thus marking another step in the forward march of artificial incubation. The admission of baby chicks to the mails in 1918 afforded another significant stimulation to the baby chick hatchery industry.

The most rapid period of expansion, however, occurred during the post-war years. Incubators with a capacity of 40,000 eggs, and yet so small and compact that they occupied a floor space of only 10 by 13 feet, began to be marketed in 1922. These were water-heated mechanisms which represented an improvement over the older type of small lamp- or air-heated incubators. Shortly after the appearance of these mammoth 40,000-egg incubators, the electrically-heated mechanisms made their commercial appearance. From that time on progress and expansion were rapid.

It is estimated that there are approximately 12,000 hatcheries, exclusive of dealers, in the United States at the present time. Because of the rapid expansion of the industry and the numerous improvements in type and construction of incubators which came in rapid succession, the industry has a very heterogeneous character. There are hatcheries equipped with only one lamp-type incubator of a very small capacity, often under a thousand eggs. Such hatcheries are still very numerous, although they are responsible for only a very small percentage of all chicks hatched in the country. At the other extreme, there are veritable chick factories equipped with the most modern types of electrically-heated incubators and having a capacity of a million or more eggs. Such hatcheries indeed are very few in number but their economic importance is of great significance. Between these two extremes there are thousands of other hatcheries with capacities ranging from over a thousand to several hundred thousand eggs equipped with most divergent types of incubators from the old lamp type to the most modern electrically-controlled machine. Together these hatcheries form the American hatchery industry.

In addition to these variations in size and type of equipment, there are also important differences due to climatic conditions and types of hatchery operation. It is only natural, then, that there should be a wide variation in the costs of production among such widely different types of hatcheries. For this reason, in attempting to study hatchery production costs, it is obviously essential to make a sharp differentiation on the basis of physical capacity and geographical location.

TYPES OF HATCHERY BUSINESS

THE COMMERCIAL HATCHERY

Generally speaking, it is possible to separate the many hatcheries into four more or less distinct types. In the first place, there is the commercial hatchery. The character of this type of hatchery, is defined by the code,⁵ as “* * * any person operating or controlling incubator equipment who produces 95 percent or more of the ‘chicks’, ‘baby ducklings’, ‘turkey poults’, ‘started chicks, ducklings, or turkey poults’ which he or it advertises or sells.” The commercial hatchery as a rule buys its eggs from poultry producers at a stipulated price above local egg market quotations. In many instances such a hatchery has a very direct interest in the flocks of the

⁵ Amended Code of Fair Competition for the Commercial and Breeder Hatchery Industry, effective Jan. 16, 1935, p. 8.

producer whose eggs it buys, and frequently spends considerable sums of money on flock improvement work and disease prevention.

THE BREEDER HATCHERY

The second type of hatchery may be termed the breeder hatchery. This is defined by the code as a hatchery which owns breeding flocks and which produces and sells chicks, ducklings, and poults only from flocks owned by itself. The breeder hatchery often specializes in the production of particular breeds and strains of chicks, ducklings, or poults and for this reason usually pays extremely careful attention to the condition of its flocks.

THE COMMERCIAL HATCHERY AND DEALER

There are also many hatcheries which own and operate their own equipment but which, in addition to the chicks hatched by their own equipment, also buy chicks from other hatcheries for resale. The code defines such a hatchery as a "commercial hatchery and dealer", and indicates that in this category are included all hatcheries which produce more than 51 percent and less than 95 percent of their total production with their own equipment.

THE DEALER

Finally, there is the dealer. The dealer does not necessarily engage merely in the buying or selling of chicks, but may also own his own incubator equipment and may hatch some chicks himself. He may hatch such chicks either from eggs produced by his own flocks or from eggs purchased in the market as long as he hatches less than 51 percent of the total number of chicks sold.

Any of these four types of hatcheries may perform any one of the several functions generally performed by hatcheries. These functions, however, will be discussed in a later section.

GEOGRAPHICAL DISTRIBUTION OF THE HATCHERY INDUSTRY

It was pointed out in the introduction that all analysis in this section on the geographical distribution of the hatchery industry was based on 11,405 hatcheries which were shown on the mailing list of the National Commercial and Breeder Hatchery Coordinating Committee as of July 1, 1934.

It is recognized that this number may not be complete, and that a number of hatcheries were not listed by the Coordinating Committee and therefore not included in this section. The omissions are, however, small in number and the results of the geographical analysis here presented are not materially affected by them.

The number and capacities of 11,405 hatcheries were first tabulated by States. The presentation by States, however, is almost entirely confined to several tables showing (1) the number of hatcheries, (2) the total capacity in each State, and (3) the relationship of incubator capacity in a given State to the number of chickens raised on farms in the same State. In these tables the States, for the most part, were arranged in the order of their numerical importance—that is,

the State with the largest number of hatcheries, or the greatest incubator capacity, or the highest ratio of capacity per 100 chickens raised on farms is shown first, and the State with the smallest shown last. The tables are, therefore, practically self-explanatory and really require no further comment.

TABLE 1.—*Geographical distribution of the hatchery industry in the United States' July 1, 1934*

[Listed alphabetically]

State	Number of hatcheries	Percent of United States	Total capacity	Percent of United States	Number of dealers	Percent of United States
Alabama.....	80	0.70	1,066,000	0.39	23	1.39
Arizona.....	25	.22	470,000	.17	11	.66
Arkansas.....	62	.54	869,000	.32	5	.30
California.....	575	5.04	15,720,000	5.69	59	3.57
Colorado.....	105	.92	2,412,000	.87	33	1.99
Connecticut.....	144	1.26	2,532,000	.92	27	1.63
Delaware.....	53	.46	1,854,000	.67	8	.48
Florida.....	79	.69	1,004,000	.36	53	3.20
Georgia.....	102	.89	1,316,000	.48	18	1.09
Idaho.....	62	.54	1,180,000	.43	12	.72
Illinois.....	600	5.26	20,717,000	7.50	70	4.22
Indiana.....	609	5.34	17,107,000	6.19	60	3.63
Iowa.....	757	6.64	21,535,000	7.79	70	4.22
Kansas.....	595	5.22	13,809,000	5.00	28	1.69
Kentucky.....	89	.78	1,733,000	.63	16	.97
Louisiana.....	34	.30	505,000	.18	9	.54
Maine.....	190	1.67	1,190,000	.43	24	1.45
Maryland.....	131	1.15	2,835,000	1.03	23	1.39
Massachusetts.....	319	2.80	3,888,000	1.41	58	3.50
Michigan.....	444	3.89	10,759,000	3.89	105	6.33
Minnesota.....	458	4.02	15,497,000	5.61	32	1.93
Mississippi.....	62	.54	888,000	.32	12	.72
Missouri.....	572	5.02	18,415,000	6.67	35	2.11
Montana.....	18	.16	288,000	.10	3	.18
Nebraska.....	330	2.89	9,487,000	3.43	71	4.28
Nevada.....	2	.02	23,000	.01	3	.18
New Hampshire.....	145	1.27	1,825,000	.66	15	.90
New Jersey.....	224	1.96	5,411,000	1.96	66	3.98
New Mexico.....	16	.14	470,000	.17	1	.06
New York.....	510	4.47	7,135,000	2.58	130	7.84
North Carolina.....	104	.91	1,273,000	.46	7	.42
North Dakota.....	50	.44	1,003,000	.36	10	.60
Ohio.....	831	7.29	27,529,000	9.96	102	6.15
Oklahoma.....	237	2.08	6,114,000	2.21	31	1.88
Oregon.....	214	1.88	3,456,000	1.25	6	.36
Pennsylvania.....	635	5.57	14,445,000	5.23	178	10.75
Rhode Island.....	37	.32	321,000	.12	10	.60
South Carolina.....	66	.58	1,047,000	.38	15	.90
South Dakota.....	124	1.09	3,608,000	1.31	15	.90
Tennessee.....	64	.56	2,113,000	.77	25	1.51
Texas.....	603	5.29	12,524,000	4.53	47	2.83
Utah.....	41	.36	1,474,000	.53	13	.78
Vermont.....	56	.49	316,000	.11	8	.48
Virginia.....	179	1.57	3,864,000	1.40	14	.84
Washington.....	240	2.10	5,331,000	1.93	14	.84
West Virginia.....	49	.43	474,000	.17	24	1.45
Wisconsin.....	473	4.15	9,266,000	3.35	50	3.02
Wyoming.....	8	.07	156,000	.06	2	.12
District of Columbia.....	2	.02	33,000	.01	7	.42
Total.....	11,405	100.00	276,287,000	100.00	1,658	100.00

TABLE 2.—*Geographical distribution of hatcheries in the United States, July 1, 1934*

[States listed in order of numerical importance]

State	Number of hatcheries	Percent of United States	State	Number of hatcheries	Percent of United States
1. Ohio.....	831	7.29	27. North Carolina.....	104	0.91
2. Iowa.....	757	6.64	28. Georgia.....	102	.89
3. Pennsylvania.....	635	5.57	29. Kentucky.....	89	.78
4. Indiana.....	609	5.34	30. Alabama.....	80	.70
5. Texas.....	603	5.29	31. Florida.....	79	.69
6. Illinois.....	600	5.26	32. South Carolina.....	66	.58
7. Kansas.....	595	5.22	33. Tennessee.....	64	.56
8. California.....	575	5.04	34. Idaho.....	62	.54
9. Missouri.....	572	5.02	35. Mississippi.....	62	.54
10. New York.....	510	4.47	36. Arkansas.....	62	.54
11. Wisconsin.....	473	4.15	37. Vermont.....	56	.49
12. Minnesota.....	458	4.02	38. Delaware.....	53	.46
13. Michigan.....	444	3.89	39. North Dakota.....	50	.44
14. Nebraska.....	330	2.89	40. West Virginia.....	49	.43
15. Massachusetts.....	319	2.80	41. Utah.....	41	.36
16. Washington.....	240	2.10	42. Rhode Island.....	37	.32
17. Oklahoma.....	237	2.08	43. Louisiana.....	34	.30
18. New Jersey.....	224	1.96	44. Arizona.....	25	.22
19. Oregon.....	214	1.88	45. Montana.....	18	.16
20. Maine.....	190	1.67	46. New Mexico.....	16	.14
21. Virginia.....	179	1.57	47. Wyoming.....	8	.07
22. New Hampshire.....	145	1.27	48. Nevada.....	2	.02
23. Connecticut.....	144	1.26	49. District of Columbia.....	2	.02
24. Maryland.....	131	1.15			
25. South Dakota.....	124	1.09			
26. Colorado.....	105	.92	Total.....	11,405	100.00

TABLE 3.—*Geographical distribution of hatching capacity in the United States, July 1, 1934*

[States listed in order of numerical importance]

State	Total hatchery capacity for State	Percent of United States	State	Total hatchery capacity for State	Percent of United States
1. Ohio.....	27,529,000	9.96	27. New Hampshire.....	1,825,000	0.66
2. Iowa.....	21,535,000	7.79	28. Kentucky.....	1,733,000	.63
3. Illinois.....	20,717,000	7.50	29. Utah.....	1,474,000	.53
4. Missouri.....	18,415,000	6.67	30. Georgia.....	1,316,000	.48
5. Indiana.....	17,107,000	6.19	31. North Carolina.....	1,273,000	.46
6. California.....	15,720,000	5.69	32. Maine.....	1,190,000	.43
7. Minnesota.....	15,497,000	5.61	33. Idaho.....	1,180,000	.43
8. Pennsylvania.....	14,445,000	5.23	34. Alabama.....	1,066,000	.39
9. Kansas.....	13,809,000	5.00	35. South Carolina.....	1,047,000	.38
10. Texas.....	12,524,000	4.53	36. Florida.....	1,004,000	.36
11. Michigan.....	10,759,000	3.89	37. North Dakota.....	1,003,000	.36
12. Nebraska.....	9,487,000	3.43	38. Mississippi.....	888,000	.32
13. Wisconsin.....	9,266,000	3.35	39. Arkansas.....	869,000	.32
14. New York.....	7,135,000	2.58	40. Louisiana.....	505,000	.18
15. Oklahoma.....	6,114,000	2.21	41. West Virginia.....	474,000	.17
16. New Jersey.....	5,411,000	1.96	42. New Mexico.....	470,000	.17
17. Washington.....	5,331,000	1.93	43. Arizona.....	470,000	.17
18. Massachusetts.....	3,888,000	1.41	44. Rhode Island.....	321,000	.12
19. Virginia.....	3,864,000	1.40	45. Vermont.....	316,000	.11
20. South Dakota.....	3,608,000	1.31	46. Montana.....	288,000	.10
21. Oregon.....	3,456,000	1.25	47. Wyoming.....	156,000	.06
22. Maryland.....	2,835,000	1.03	48. Nevada.....	23,000	.01
23. Connecticut.....	2,532,000	.92	49. District of Columbia.....	33,000	.01
24. Colorado.....	2,412,000	.87			
25. Tennessee.....	2,113,000	.77			
26. Delaware.....	1,854,000	.67	Total.....	276,287,000	100.00

The two dot maps (figs. 1 and 2) which accompany tables 2 and 3 present a graphic picture of the distribution of the hatchery industry by counties. Each dot in figure 1 represents one hatchery. In figure 2 each dot represents a capacity of 25,000 eggs.

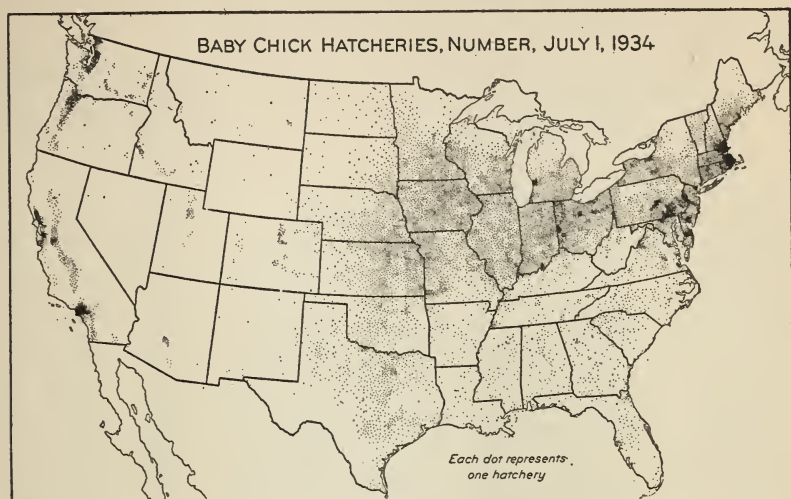


FIGURE 1.—The location of hatcheries in the United States, July 1, 1934.

Some areas in which relatively great concentration of hatcheries is shown do not have proportionately large total capacity of incubators.

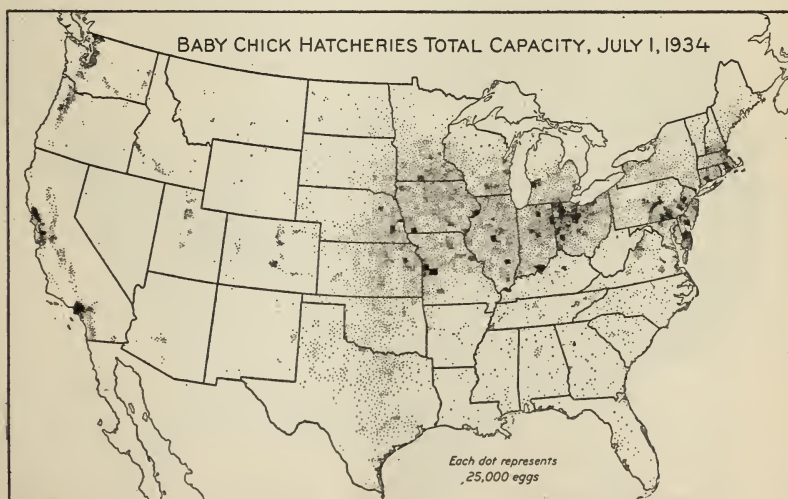


FIGURE 2.—The location of hatching capacity in the United States, July 1, 1934.

For instance, in parts of Massachusetts and some other New England areas where breeder hatcheries predominate there are large numbers of hatcheries but their total capacity is relatively small compared with some other sections of the country.

Other areas, such as northwestern Ohio and western Missouri, present the opposite picture. In these sections the concentration

TABLE 4.—*Distribution of hatchery capacity in the United States, July 1, 1934¹ per 100 chickens raised on farms*

[States listed in order of numerical importance]

State	Total hatchery capacity for State	Chickens raised on the farms of the State in 1933	Hatching capacity per 100 chickens raised	State	Total hatchery capacity for State	Chickens raised on the farms of the State in 1933	Hatching capacity per 100 chickens raised
	<i>Thous.</i>	<i>Thous.</i>			<i>Thous.</i>	<i>Thous.</i>	
1. Ohio.....	27,529	33,370	82.50	26. Florida.....	1,004	2,763	36.34
2. Delaware.....	1,854	2,525	73.43	27. Idaho.....	1,180	3,317	35.57
3. Oregon.....	3,456	4,790	72.15	28. New York.....	7,135	22,616	31.55
4. California.....	15,720	22,223	70.74	29. Maine.....	1,190	3,796	31.35
5. New Jersey.....	5,411	7,855	68.89	30. Oklahoma.....	6,114	19,921	30.69
6. Massachusetts.....	3,888	5,862	66.31	31. New Mexico.....	470	1,586	29.63
7. Connecticut.....	2,532	4,175	60.65	32. South Dakota.....	3,608	13,870	26.01
8. New Hampshire.....	1,825	3,010	60.63	33. Virginia.....	3,864	16,746	23.07
9. Pennsylvania.....	14,445	24,800	58.25	34. Vermont.....	316	1,672	18.90
10. Indiana.....	17,107	29,482	58.03	35. South Carolina.....	1,047	6,725	15.57
11. Illinois.....	20,717	37,622	55.07	36. Tennessee.....	2,113	15,133	13.96
12. Minnesota.....	15,497	28,324	54.71	37. North Dakota.....	1,003	7,335	13.67
13. Michigan.....	10,759	20,579	52.28	38. Wyoming.....	156	1,357	11.50
14. Washington.....	5,331	10,868	49.05	39. Georgia.....	1,316	11,635	11.31
15. Missouri.....	18,415	37,853	48.65	40. Kentucky.....	1,733	16,181	10.71
16. Arizona.....	470	1,015	46.31	41. Mississippi.....	888	8,948	9.92
17. Rhode Island.....	321	712	45.08	42. Alabama.....	1,066	10,773	9.90
18. Colorado.....	2,412	5,393	44.72	43. North Carolina.....	1,273	14,114	9.02
19. Iowa.....	21,535	50,234	42.87	44. West Virginia.....	474	5,333	8.89
20. Wisconsin.....	9,266	22,747	40.74	45. Arkansas.....	869	10,318	8.42
21. Utah.....	1,474	3,633	40.57	46. Montana.....	288	3,496	8.24
22. Maryland.....	2,835	7,042	40.26	47. Louisiana.....	505	6,238	8.10
23. Texas.....	12,524	32,256	38.83	48. Nevada.....	23	420	5.48
24. Kansas.....	13,809	35,883	38.48				
25. Nebraska.....	9,487	26,004	36.48	Total.....	276,254	662,550	41.70

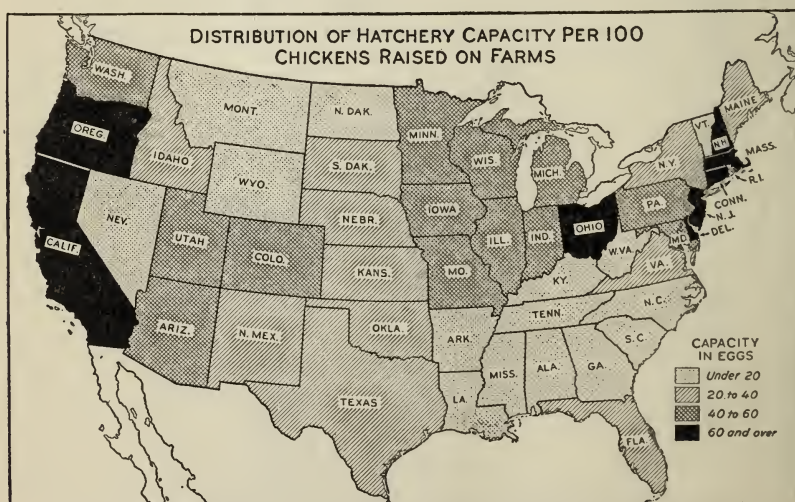


FIGURE 3.—Hatchery capacity, July 1, 1934, per 100 chickens raised on farms in 1933, by States.

of capacity is much more pronounced than the concentration of hatcheries. This is due to the prevalence of very large hatcheries in these sections.

Figure 3 shows in graphic form the information presented in table 4 on the distribution of hatchery capacity in relation to the number of chickens raised. From this map it can be readily observed which sections of the country have sufficient capacity to export quantities of chicks to other States, and which States need to import chicks.

The 11,405 hatcheries were divided into eight groups according to the incubator capacity of the individual hatcheries. These eight capacity groups are as follows:

- | | |
|--------------------------|----------------------------|
| 1. Under 10,000 eggs | 5. 60,000 to 99,999 eggs |
| 2. 10,000 to 24,999 eggs | 6. 100,000 to 199,999 eggs |
| 3. 25,000 to 39,999 eggs | 7. 200,000 to 499,999 eggs |
| 4. 40,000 to 59,999 eggs | 8. 500,000 eggs and over |

These capacity groups were determined by constructing a frequency distribution table in which all hatcheries were grouped by capacity intervals of 1,000. That is, hatcheries with a capacity of less than 1,000 were all placed in one class, those with a capacity of 1,000 to 2,000 in the next, and so on for each class. This frequency distribution table indicated a fairly natural division into a number of broader classes with large numbers of hatcheries grouped at certain capacities. On the basis of these natural divisions, which were probably due to the capacities of different makes of incubators, the above classification was determined. These capacity groups were used throughout this study.

Table 5 shows the relative importance of the different hatchery capacity classes. The hatcheries in the first class, which have a capacity under 10,000 eggs, are by far the most numerous. Out of a total of 11,405 hatcheries, 4,934 or 43.3 percent fall in this class. Notwithstanding its numerical importance, this group, however, represents only a very small part of the total hatching capacity, namely, 6.9 percent. The second capacity class is the one which includes hatcheries with a capacity range of from 10,000 to 25,000 eggs. This class represents a larger percentage of the total incubator capacity than any of the other capacity classes. There are 3,315 hatcheries in this class and their total capacity amounts to 50,774,000 eggs. The percentages of the total are 29.1 percent of the number and 18.4 percent of the capacity.

TABLE 5.—*Relative importance of 8 different capacity classes for 11,405 hatcheries in the United States, July 1, 1934*

Capacity classes	Number of hatcheries	Percent of total	Order of importance	Capacity	Percent of total	Order of importance
1. Under 10,000.....	4,934	43.3	1	19,110,000	6.9	7
2. 10,000 to 24,999.....	3,315	29.1	2	50,774,000	18.4	1
3. 25,000 to 39,999.....	1,274	11.2	3	39,370,000	14.2	4
4. 40,000 to 59,999.....	895	7.8	4	42,481,000	15.4	3
5. 60,000 to 99,999.....	576	5.0	5	44,744,000	16.2	2
6. 100,000 to 199,999.....	294	2.6	6	38,790,000	14.0	5
7. 200,000 to 499,999.....	102	.9	7	28,946,000	10.5	6
8. 500,000 and over.....	15	.1	8	12,072,000	4.4	8
Total.....	11,405	100.0	-----	276,287,000	100.0	-----

Progressively, as the capacity of the classes increases, the number of hatcheries in each class diminishes. Table 5 shows that the number of hatcheries in class 1 is the largest; in class 2, second largest; in

class 3, third largest, etc. It is, however, quite different with the total capacity of the hatcheries within each class. There we find that the capacity of class 1 is only slightly larger than the capacity in class 8. The largest capacities are found in classes 2 (10,000 to 24,999) and 5 (60,000 to 99,999).

It is interesting to note that the 15 hatcheries in class 8 have two-thirds as large a capacity as all of the 4,934 hatcheries in class 1, and that the 102 hatcheries in class 7 have more than one and one-half times that capacity.

This relationship between the number of hatcheries in a class and the total capacity of a given class is readily apparent from figure 4 which depicts this relationship graphically.

RELATIVE IMPORTANCE OF THE DIFFERENT CAPACITY CLASSES OF HATCHERIES

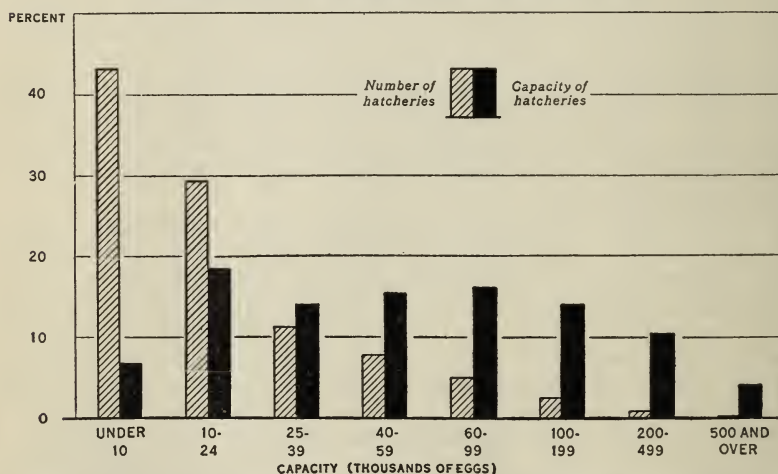


FIGURE 4.—The number and capacity of hatcheries in each of 10 capacity classes, as of July 1, 1934.

Inasmuch as this entire study was based upon the operations of hatcheries during the fiscal year 1934,⁶ it was felt that some analysis should be made on the basis of the 10 regions into which all of the hatcheries were divided in the original code which was then in operation.⁷ These 10 regions are as follows:

Region

1. California, Oregon, Washington, Idaho, Nevada, Arizona, Utah, Wyoming, Montana.
2. New Mexico, Texas, Oklahoma, Arkansas, Louisiana.
3. Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Florida.
4. North Dakota, South Dakota, Nebraska, Kansas, Colorado.
5. Maine, Massachusetts, Vermont, New Hampshire, Rhode Island, Connecticut, New York.
6. Delaware, New Jersey, Pennsylvania, District of Columbia, Virginia, Maryland, West Virginia.
7. Ohio.
8. Indiana and Illinois.
9. Iowa and Missouri.
10. Minnesota, Wisconsin, Michigan.

⁶ July 1, 1933, to June 30, 1934.

⁷ All analysis in the following sections dealing with functions of hatcheries, hatching efficiency, cost of production, and margin of profit is based on 10 regions.

The following tables present a rough geographic picture of the hatchery industry on the basis of the above-enumerated 10 regions and show the regional distribution of the hatcheries and of their incubator capacity. At this time, however, no analysis of the figures in these tables is thought necessary because similar tables are also presented later on the basis of the 20 revised regions, along with a brief analysis.

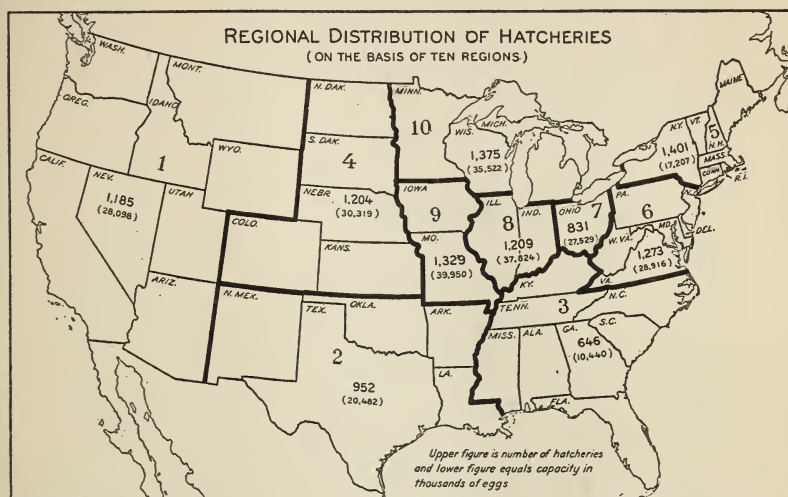


FIGURE 5.—Number of hatcheries and hatching capacity, July 1, 1934, by 10 regions

TABLE 6.—Regional distribution of 11,405 hatcheries in the United States, July 1, 1934

[By 10 regions]

Region	Number of hatcheries	Percent of United States total	Order of numerical importance	Regional capacity (In thousands)	Percent of United States total	Order of numerical importance
1	1,185	10.39	7	28,098	10.17	6
2	952	8.35	8	20,482	7.41	8
3	646	5.66	10	10,440	3.78	10
4	1,204	10.56	6	30,319	10.97	4
5	1,401	12.28	1	17,207	6.23	9
6	1,273	11.16	4	28,916	10.47	5
7	831	7.29	9	27,529	9.96	7
8	1,209	10.60	5	37,824	13.69	2
9	1,329	11.65	3	39,950	14.46	1
10	1,375	12.06	2	35,522	12.86	3
Total, United States.....	11,405	100.00	-----	276,287	100.00	-----

TABLE 7.—Relative distribution of 11,405 hatcheries in the United States, July 1, 1934, according to capacity classes and regions

[By 10 regions]

Region	Hatcheries with capacity under 10,000		Hatcheries with capacity from 10,000-24,999		Hatcheries with capacity from 25,000-39,999		Hatcheries with capacity from 40,000-59,999		Hatcheries with capacity from 60,000-99,999		Hatcheries with capacity from 100,000-199,999		Hatcheries with capacity from 200,000-499,999		Hatcheries with capacity from 500,000 and over		Total	
	Num-ber hatch-eries	Per-cent of total for region	Num-ber hatch-eries	Per-cent of total for region	Num-ber hatch-eries	Per-cent of total for region	Num-ber hatch-eries	Per-cent of total for region	Num-ber hatch-eries	Per-cent of total for region	Num-ber hatch-eries	Per-cent of total for region	Num-ber hatch-eries	Per-cent of total for region	Num-ber hatch-eries	Per-cent of total for region	Num-ber hatch-eries	Per-cent
1.-----	524	44.22	356	30.04	117	9.87	71	5.99	63	5.32	44	3.71	10	0.85	1	0.08	1,185	100
2.-----	316	33.19	380	39.92	126	13.24	82	8.61	30	3.15	15	1.58	2	.21	1	0.10	952	100
3.-----	322	49.84	223	34.52	54	8.36	24	3.72	10	1.55	10	1.55	2	.31	1	.15	646	100
4.-----	435	40.28	328	27.24	141	11.71	137	11.38	71	5.90	33	2.74	8	.67	1	.08	1,204	100
5.-----	885	63.17	382	27.27	74	5.28	28	2.00	22	1.57	6	.43	3	.21	1	.07	1,401	100
6.-----	534	41.95	398	31.26	153	12.02	86	6.76	61	4.79	33	2.59	8	.63	1	.07	1,273	100
7.-----	298	35.86	220	26.47	118	14.20	79	9.51	61	7.34	36	4.33	18	2.17	1	.12	831	100
8.-----	446	36.89	301	24.90	176	14.56	127	10.50	98	8.10	39	3.23	18	1.49	4	.33	1,209	100
9.-----	598	45.00	306	23.02	149	11.21	133	10.01	76	5.72	40	3.01	22	1.65	5	.38	1,329	100
10.-----	526	38.26	421	30.62	166	12.07	128	9.31	84	6.11	38	2.76	11	.80	1	.07	1,375	100
Total, United States.	4,934	43.26	3,315	29.07	1,274	11.17	895	7.85	576	5.05	294	2.58	102	.89	15	.13	11,405	100

TABLE 8.—Relative distribution of the hatchling capacity of 11,405 hatcheries in the United States, July 1, 1934, according to capacity classes and regions

[By 10 regions]

Region	Hatcheries with capacity under 10,000		Hatcheries with capacity from 10,000-24,999		Hatcheries with capacity from 25,000-39,999		Hatcheries with capacity from 40,000-59,999		Hatcheries with capacity from 60,000-99,999		Hatcheries with capacity from 100,000-199,999		Hatcheries with capacity from 200,000-499,999		Hatcheries with capacity from 500,000 and over		Total
	Capacity, eggs	Per-cent of total for region	Capacity, eggs	Per-cent of total for region	Capacity, eggs	Per-cent of total for region	Capacity, eggs	Per-cent of total for region	Capacity, eggs	Per-cent of total for region	Capacity, eggs	Per-cent of total for region	Capacity, eggs	Per-cent of total for region	Capacity, eggs	Per-cent of total for region	
1.....	Thou-sands		Thou-sands		Thou-sands		Thou-sands		Thou-sands		Thou-sands		Thou-sands		Thou-sands		
2.....	2,135	7.60	5,473	12.76	3,585	12.76	3,295	11.73	4,758	16.93	5,810	20.68	3,042	10.82	28,098		100
3.....	1,145	5.59	5,914	18.91	3,872	18.91	3,974	19.40	2,452	11.97	1,984	9.69	533	2.60	20,482		100
4.....	1,197	11.47	3,319	17.42	1,718	16.46	1,143	10.95	821	7.86	1,253	12.00	472	4.52	10,440		100
5.....	1,025	5.36	5,559	16.46	4,392	16.46	6,633	21.88	5,472	18.05	4,368	14.41	1,890	6.23	30,319		100
6.....	3,902	22.68	2,323	13.50	4,694	16.53	1,325	7.70	1,640	9.53	709	4.12	1,123	6.52	17,207		100
7.....	2,524	8.73	6,069	18.20	4,694	16.53	4,065	14.06	4,716	17.13	4,344	15.02	2,520	8.74	28,916		100
8.....	1,196	4.34	3,475	12.62	3,635	13.20	3,668	13.33	4,716	17.13	5,168	18.77	4,728	17.18	27,529		100
9.....	1,601	3.97	4,617	12.20	5,434	14.37	6,093	15.87	7,598	20.09	5,052	13.36	4,924	13.02	37,824		100
10.....	1,805	4.52	4,666	11.68	4,605	11.53	6,294	15.75	6,167	15.44	5,111	12.79	6,340	15.87	39,950		100
	2,080	5.86	6,401	18.02	5,112	14.39	6,081	17.12	6,426	18.09	4,991	14.05	3,368	9.48	35,522		100
Total, United States.	10,110	6.92	50,774	18.38	39,370	14.25	42,481	15.37	44,744	16.19	38,790	14.04	28,946	10.48	12,072	4.37	276,287

The amended Code of Fair Competition for the Commercial and Breeder Hatchery Industry, which became effective on January 16, 1935, reorganized the previous 10 regions into the following 20 revised regions:

Region

1. California.
2. Oregon, Washington, Idaho, Nevada, Arizona, Utah, Wyoming, Montana.
3. Texas, New Mexico.
4. Oklahoma, Arkansas, Louisiana.
5. Kentucky, Tennessee, North Carolina.
6. South Carolina, Georgia, Alabama, Mississippi, Florida.
7. Nebraska, South Dakota, North Dakota.
8. Kansas, Colorado.
9. New York, Vermont.
10. Maine, Massachusetts, New Hampshire, Rhode Island, Connecticut.
11. Pennsylvania, West Virginia.
12. Delaware, New Jersey, Maryland, Virginia, District of Columbia.
13. Ohio.
14. Michigan.
15. Indiana.
16. Illinois.
17. Iowa.
18. Missouri.
19. Minnesota.
20. Wisconsin.

An analysis of the number of hatcheries and the incubator capacity of the hatcheries was made on the basis of these 20 revised regions. The capacity classes, however, remain the same.

Table 9 on the regional distribution of the hatchery industry is in every respect similar to table 6. The only difference between these two tables is that table 6 is based on the 10 regions while table 9 gives the same information on the basis of the 20 revised regions.

TABLE 9.—*Regional Distribution of 11,405 Hatcheries in the United States, July 1, 1934*

[By 20 regions]

Region	Number of hatcheries	Percent of total	Order of importance	Regional capacity	Percent of total	Order of importance
1.	575	5.1	11	15,720,000	5.7	7
2.	610	5.4	7	12,378,000	4.5	13
3.	619	5.4	6	12,994,000	4.7	12
4.	333	2.9	19	7,488,000	2.7	17
5.	257	2.3	20	5,119,000	1.8	20
6.	389	3.4	18	5,321,000	1.9	19
7.	504	4.4	14	14,098,000	5.1	10
8.	700	6.1	4	16,221,000	5.9	6
9.	566	5.0	13	7,451,000	2.7	18
10.	835	7.3	1	9,756,000	3.5	15
11.	684	6.0	5	14,919,000	5.4	9
12.	589	5.2	10	13,997,000	5.1	11
13.	831	7.3	2	27,529,000	10.0	6
14.	444	3.9	17	10,759,000	3.9	14
15.	609	5.3	8	17,107,000	6.2	5
16.	600	5.3	9	20,717,000	7.5	3
17.	757	6.6	3	21,535,000	7.8	2
18.	572	5.0	12	18,415,000	6.7	4
19.	458	4.0	16	15,497,000	5.6	8
20.	473	4.1	15	9,266,000	3.3	16
All regions.....	11,405	100.0	-----	276,287,000	100.0	-----

Table 9 shows the number of hatcheries in each of the 20 regions, the total capacity of each, the percentage of each region to the total for the United States, and the order of importance of the region

according to magnitude. The same information is graphically presented in figure 6.

Significant concentration of incubator capacity appears in regions 13, 15, 16, 17, 18, and 19. In these regions, comprised of the States of Ohio, Indiana, Illinois, Missouri, Iowa, and Minnesota, are 33.5 percent of the total number of hatcheries. The combined capacity of these regions amounts to 43.8 percent of the total hatching capacity in the United States. It is in these States that almost one-third of all the poultry in the United States is raised on farms.

Tables 10 and 12, showing the number and total capacity of hatcheries in each region by capacity groups, make comparison of the different regions easy. For instance, it can be seen from these tables that the largest percentage of small hatcheries is found in region 10, which comprises the New England States of Maine, Massachusetts, New Hampshire, Rhode Island, and Connecticut. In this region 66.6 percent or two-thirds of all hatcheries fall into class 1, or hatch-

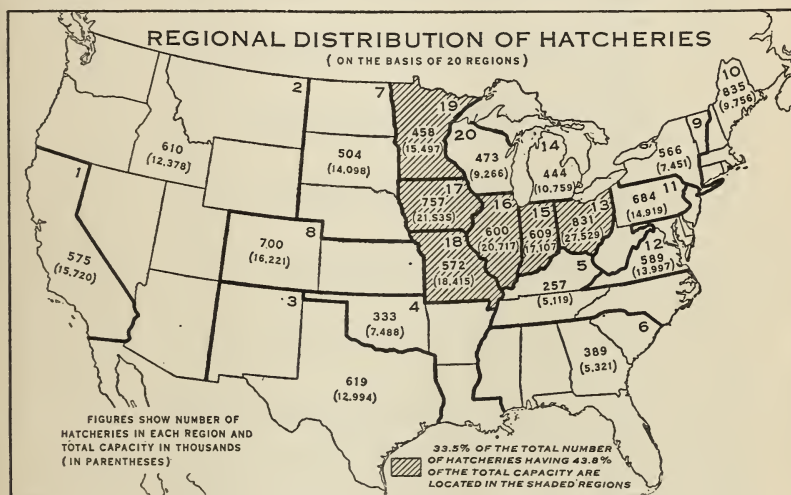


Figure 6.—Number of hatcheries and hatching capacity, July 1, 1934, by 20 regions.

eries with capacities of 10,000 eggs or less. Region 9, comprised of the States of New York and Vermont, is second in this respect with 58.1 percent of all the hatcheries falling in class 1. These are the regions where most of the hatcheries are breeder hatcheries, which are not especially well adapted to large scale production.

The largest percentage of hatcheries with capacities ranging from 10,000 to 25,000 is in region 3, comprised of the States of New Mexico and Texas. Such hatcheries here comprise 42.5 percent of the total number of the hatcheries in the region. The largest percentage of hatcheries with a capacity of 25,000 to 200,000, as well as the very largest hatcheries in the country, is found in the regions of heaviest hatchery concentration and heaviest poultry production. These regions were referred to above and are shaded on the map which shows the distribution of the hatchery industry on the basis of the 20 regions.

Tables 11 and 13 show information on the number and capacity of hatcheries, broken down according to capacity classes, by States.

TABLE 10.—Relative distribution of 11,405 hatcheries in the United States, July 1, 1934, according to capacity classes and regions

[By 20 regions]

Region	Hatcheries with capacity under 10,000		Hatcheries with capacity from 10,000-24,999		Hatcheries with capacity from 25,000-39,999		Hatcheries with capacity from 40,000-59,999		Hatcheries with capacity from 60,000-99,999		Hatcheries with capacity from 100,000-199,999		Hatcheries with capacity from 200,000-499,999		Hatcheries with capacity from 500,000 and over		Total	
	Num-ber of hatch-eries	Per-cent of total for region	Num-ber of hatch-eries	Per-cent of total for region	Num-ber of hatch-eries	Per-cent of total for region	Num-ber of hatch-eries	Per-cent of total for region	Num-ber of hatch-eries	Per-cent of total for region	Num-ber of hatch-eries	Per-cent of total for region	Num-ber of hatch-eries	Per-cent of total for region	Num-ber of hatch-eries	Per-cent of total for region	Num-ber of hatch-eries	Per-cent
1.	212	36.9	190	33.0	66	11.5	43	7.5	33	5.7	24	4.2	7	1.2	—	—	575	100.
2.	312	51.1	166	27.2	51	8.4	28	4.6	30	4.9	20	3.3	3	.5	—	—	610	100
3.	198	32.1	263	42.5	86	13.9	47	7.6	15	2.4	8	1.3	1	.1	1	.1	619	100
4.	118	35.4	117	35.1	40	12.1	35	10.5	15	4.5	7	2.1	1	.3	—	—	333	100
5.	115	44.8	97	37.7	19	7.4	12	4.7	6	2.3	6	2.3	1	.4	1	.4	257	100
6.	207	53.2	126	32.4	35	9.0	12	3.1	4	1.0	4	1.0	1	.3	—	—	389	100
7.	153	30.4	168	33.3	57	11.3	82	16.3	30	5.9	10	2.0	3	.6	1	.2	504	100
8.	332	47.4	160	22.9	84	12.0	55	7.9	41	5.8	23	3.3	5	.7	—	—	700	100
9.	329	58.1	166	29.3	38	6.7	15	2.7	15	2.7	2	.3	1	.2	—	—	566	100
10.	556	66.6	216	25.9	36	4.3	13	1.6	7	.8	4	.5	2	.2	1	.1	835	100
11.	428	42.8	214	31.3	74	10.8	52	7.6	32	4.7	15	2.2	4	.6	—	—	684	100
12.	241	40.9	184	31.2	79	13.4	34	5.8	29	4.9	18	3.1	4	.7	—	—	589	100
13.	293	35.9	220	26.5	118	14.2	79	9.5	61	7.3	36	4.3	18	2.2	1	.1	831	100
14.	158	35.6	130	29.3	67	15.1	46	10.3	32	7.2	11	2.5	—	—	—	—	444	100
15.	229	37.6	159	26.1	93	15.3	50	8.2	52	8.5	18	2.9	7	1.2	1	.2	609	100
16.	217	36.2	142	23.7	93	13.8	77	12.8	46	7.7	21	3.5	11	1.8	3	.5	600	100
17.	277	36.6	199	26.3	96	12.7	102	13.5	49	6.5	24	3.1	10	1.3	—	—	757	100
18.	321	56.1	107	15.7	53	9.3	31	5.4	27	4.7	16	2.8	12	2.1	5	.9	572	100
19.	151	33.0	140	30.6	54	11.8	57	12.4	27	5.9	18	3.9	10	2.2	1	.2	458	100
20.	217	43.9	151	31.9	45	9.5	25	5.3	23	5.3	9	1.9	1	.2	—	—	473	100
Total, United States.	4,934	43.3	3,315	29.1	1,274	11.2	895	7.8	576	5.0	294	2.6	102	.9	15	.1	11,405	100

TABLE 11.—Relative distribution by States of 11,405 hatcheries in the United States July 1, 1934, according to capacity classes

[Arranged alphabetically]

State	Hatcheries with capacity under 10,000		Hatcheries with capacity from 10,000 to 24,999		Hatcheries with capacity from 25,000 to 39,999		Hatcheries with capacity from 40,000 to 59,999		Hatcheries with capacity from 60,000 to 99,999		Hatcheries with capacity from 100,000 to 199,999		Hatcheries with capacity from 200,000 to 499,999		Hatcheries with capacity from 500,000 and over		Total	
	Num-ber of hatch-eries	Percent of total for State	Num-ber of hatch-eries	Percent of total for State	Num-ber of hatch-eries	Percent of total for State	Num-ber of hatch-eries	Percent of total for State	Num-ber of hatch-eries	Percent of total for State	Num-ber of hatch-eries	Percent of total for State	Num-ber of hatch-eries	Percent of total for State	Num-ber of hatch-eries	Percent of total for State	Num-ber of hatch-eries	Percent
Alabama.....	45	56.3	25	31.3	6	7.5	3	3.7	2	8.0	1	1.2					80	100
Arizona.....	12	48.0	6	24.0	3	12.0	2	8.0	2	8.0							25	100
Arkansas.....	34	54.8	15	24.0	5	8.1	6	9.7	2	3.2							62	100
California.....	212	36.9	190	33.0	66	11.5	43	7.5	33	5.7	24	4.2	7	1.2			575	100
Colorado.....	40	38.1	32	30.5	10	9.5	11	10.5	11	10.5	1	.9					105	100
Connecticut.....	76	52.8	50	34.7	7	4.9	5	3.5	4	2.7	1	.7					144	100
Delaware.....	12	22.6	15	28.3	11	20.8	4	7.5	9	17.0	2	3.8			1	0.7	53	100
Florida.....	46	58.2	25	31.7	3	3.8	2	2.5	2	2.5	1	1.3					79	100
Georgia.....	53	52.0	36	35.3	10	9.8	2	1.9									102	100
Idaho.....	32	51.6	15	24.2	7	11.3	2	3.2	5	8.1	1	1.6					62	100
Illinois.....	217	36.2	142	23.7	83	13.8	77	12.8	46	7.7	21	3.5	11	1.8	3	.5	600	100
Indiana.....	229	37.6	159	26.1	93	15.3	50	8.2	52	8.5	18	2.9	7	1.2	1	.2	609	100
Iowa.....	277	36.6	199	26.3	96	12.7	102	13.5	49	6.0	24	3.1	10	1.3			737	100
Kansas.....	292	49.1	128	21.5	74	12.4	44	7.4	30	5.0	22	3.7	5	.9			595	100
Kentucky.....	43	48.4	30	33.7	8	9.0	6	6.7	1	1.1					1	1.1	89	100
Louisiana.....	17	50.0	12	35.3	3	8.8			2	5.9							34	100
Maine.....	152	80.0	35	18.4	3	1.6											190	100
Maryland.....	30	38.1	47	35.9	16	12.2	9	6.9	6	4.6	3	2.3					131	100
Massachusetts.....	204	63.9	86	27.0	20	6.4	3	.9	2	.6	3	.9	1	.3			319	100
Michigan.....	158	35.6	130	29.3	67	15.1	46	10.3	32	7.2	11	2.5					444	100
Minnesota.....	151	33.0	140	30.6	54	11.8	57	12.4	27	5.9	18	3.9	10	2.2	1	.2	458	100
Mississippi.....	28	45.2	20	32.3	9	14.5	4	6.4	1	1.6							62	100
Missouri.....	321	56.1	107	18.7	53	9.3	31	16.7	27	4.7	16	2.8	12	2.1	5	.9	572	100
Montana.....	10	55.5	5	27.8			3	16.7									18	100
Nebraska.....	104	31.5	108	32.7	37	11.2	50	15.2	21	6.4	7	2.1	2	.6	1	.3	330	100
Nevada.....	1	50.0	1	50.0													2	100
New Hampshire.....	98	67.6	37	25.5	5	3.4	3	2.1	1	.7							145	100
New Jersey.....	99	44.2	70	31.2	23	10.2	14	6.3	8	3.6	8	3.6	2	.9			224	100
New Mexico.....	5	31.2	6	37.5	3	18.7	1	6.3			1	6.3					16	100
New York.....	282	55.3	159	31.2	37	7.3	14	2.7	15	2.9	2	1.0	1	.2			510	100
North Carolina.....	51	49.0	44	42.3	7	6.7	1	1.0									104	100
North Dakota.....	19	38.0	21	42.0			7	14.0			1	2.0					50	100
Ohio.....	298	35.9	220	26.5	118	14.2	79	9.5	61	7.3	36	4.3	18	2.2	1	.1	831	100
Oklahoma.....	167	28.3	90	28.0	32	13.5	29	12.2	11	4.6	7	3.0	1	.4			237	100
Oregon.....	124	38.0	57	26.6	16	7.4	3	1.4	10	4.7	3	1.4	1	.5			214	100

TABLE 11.—Relative distribution by States of 11,405 hatcheries in the United States July 1, 1934, according to capacity classes—Continued

[Arranged alphabetically]

State	Hatcheries with capacity under 10,000		Hatcheries with capacity from 10,000 to 24,999		Hatcheries with capacity from 25,000 to 39,999		Hatcheries with capacity from 40,000 to 59,999		Hatcheries with capacity from 60,000 to 99,999		Hatcheries with capacity from 100,000 to 199,999		Hatcheries with capacity from 200,000 to 499,999		Hatcheries with capacity from 500,000 and over		Total	
	Num-ber of hatch-eries	Percent of total for State	Num-ber of hatch-eries	Percent of total for State	Num-ber of hatch-eries	Percent of total for State	Num-ber of hatch-eries	Percent of total for State	Num-ber of hatch-eries	Percent of total for State	Num-ber of hatch-eries	Percent of total for State	Num-ber of hatch-eries	Percent of total for State	Num-ber of hatch-eries	Percent of total for State	Num-ber of hatch-eries	Percent
Pennsylvania.....	255	40.2	207	32.6	73	11.5	50	7.9	32	5.0	14	2.2	4	0.6	—	—	635	100
Rhode Island.....	26	70.3	8	21.6	1	2.7	2	5.4	1	1.5	—	—	—	—	—	—	37	100
South Carolina.....	35	53.0	20	30.3	7	10.7	1	1.5	—	—	—	—	—	—	—	—	66	100
South Dakota.....	50	24.2	39	31.5	20	16.1	25	20.2	7	5.6	2	3.0	—	—	—	—	124	100
Tennessee.....	21	32.8	23	35.9	4	6.3	5	7.8	5	7.8	5	7.8	1	1.6	—	—	64	100
Texas.....	193	32.0	257	42.6	83	13.7	46	7.6	15	2.5	7	1.2	1	0.2	1	.2	603	100
Utah.....	18	43.9	6	14.6	5	12.2	5	12.2	2	4.9	4	9.8	1	2.4	—	—	41	100
Vermont.....	47	83.9	7	12.5	1	1.8	1	1.8	—	—	—	—	—	—	—	—	56	100
Virginia.....	80	44.7	50	27.9	29	16.2	7	3.9	6	3.4	5	2.8	2	1.1	—	—	179	100
Washington.....	112	46.7	73	30.4	19	7.9	12	5.0	11	4.6	12	5.0	1	.4	—	—	240	100
West Virginia.....	38	77.6	7	14.3	1	2.0	2	4.1	—	—	1	2.0	—	—	—	—	49	100
Wisconsin.....	217	45.9	151	31.9	45	9.5	25	5.3	25	5.3	9	1.9	1	.2	—	—	473	100
Wyoming.....	3	37.5	3	37.5	1	12.5	1	12.5	—	—	—	—	—	—	—	—	8	100
District of Columbia.....	—	—	2	100.0	—	—	—	—	—	—	—	—	—	—	—	—	2	100
Total, United States.....	4,934	43.3	3,315	29.1	1,274	11.2	895	7.8	576	5.0	294	2.6	102	.9	15	.1	11,405	100

TABLE 12.—*Relative distribution of 11,405 hatcheries in the United States, July 1, 1934, according to capacity classes and regions*

[By 20 regions]

Region	Hatcheries with capacity under 10,000		Hatcheries with capacity from 10,000-24,999		Hatcheries with capacity from 25,000-39,999		Hatcheries with capacity from 40,000-59,999		Hatcheries with capacity from 60,000-99,999		Hatcheries with capacity from 100,000-199,999		Hatcheries with capacity from 200,000-499,999		Hatcheries with capacity from 500,000 and over		Total
	Capac-ity, eggs	Percent of total for re-gion	Capac-ity, eggs	Percent of total for re-gion	Capac-ity, eggs	Percent of total for re-gion	Capac-ity, eggs	Percent of total for re-gion	Capac-ity, eggs	Percent of total for re-gion	Capac-ity, eggs	Percent of total for re-gion	Capac-ity, eggs	Percent of total for re-gion	Capac-ity, eggs	Percent of total for re-gion	
1	Thou-sands		Thou-sands		Thou-sands		Thou-sands		Thou-sands		Thou-sands		Thou-sands		Thou-sands		Thou-sands
2	901	5.7	2,933	18.7	2,047	13.0	1,930	12.3	2,499	15.9	3,318	21.1	2,092	13.3	15,720		100
3	1,234	10.0	2,640	20.5	1,538	12.4	1,365	11.0	2,259	18.3	2,492	20.1	950	7.7	12,378		100
4	731	5.6	4,162	32.0	2,655	20.4	2,293	17.7	1,133	8.7	1,112	8.6	300	2.3	12,994	4.7	100
5	414	5.5	1,752	23.4	1,217	16.3	1,681	22.5	1,319	17.6	872	11.6	233	3.1	7,488		100
6	442	8.7	1,502	29.3	624	12.2	558	10.9	519	10.1	712	13.9	245	4.8	5,119	10.1	100
7	755	14.2	1,817	34.1	1,094	20.5	585	11.0	302	5.7	541	10.2	227	4.3	5,321		100
8	523	3.7	2,730	19.4	1,775	12.6	3,963	28.1	2,417	17.1	1,336	9.5	696	4.9	14,098	4.7	100
9	1,486	19.9	2,442	32.8	1,216	16.1	2,670	16.5	3,055	18.8	3,032	18.7	1,194	7.4	16,221		100
10	2,416	24.8	3,117	32.0	1,107	11.3	717	9.6	1,103	14.8	252	3.4	235	3.2	7,451	6.4	100
11	1,354	9.1	3,249	21.8	2,264	15.2	2,449	16.4	2,356	15.8	1,913	12.8	1,334	8.9	9,756		100
12	1,170	8.4	2,820	20.1	2,430	17.4	1,616	11.5	2,338	16.7	2,431	17.4	1,192	8.5	14,919		100
13	1,196	4.3	3,475	12.6	3,635	13.2	3,668	13.3	4,716	17.2	5,168	18.8	4,728	17.2	13,997		100
14	660	6.1	2,015	18.7	2,088	19.2	2,182	20.3	2,448	22.8	1,386	12.9	943	3.4	27,529	3.4	100
15	794	4.6	2,435	14.2	2,900	16.9	2,378	13.9	3,797	22.2	2,344	13.7	523	11.4	10,759		100
16	707	3.4	2,182	10.5	2,544	12.3	3,625	17.5	3,801	18.3	2,708	13.1	1,946	14.4	17,107	3.1	100
17	935	4.3	2,099	14.4	2,959	13.8	4,820	22.4	3,882	18.0	3,057	14.2	2,783	12.9	20,717	10.5	100
18	870	4.7	1,567	8.5	1,946	8.9	1,474	8.0	2,285	12.4	3,054	11.2	4,962	27.0	21,535	27.0	100
19	391	3.8	2,103	13.6	1,648	13.1	2,740	17.7	2,111	13.6	2,353	15.2	2,888	18.6	15,497	6.9	100
20	829	8.9	2,283	24.6	1,396	15.1	1,159	12.5	1,867	20.2	1,252	13.5	480	5.2	9,266		100
Total, United States.....	19,110	6.9	50,774	18.4	39,370	14.2	42,481	15.4	44,744	16.2	38,790	14.0	28,946	10.5	12,072	4.4	276,287

TABLE 13.—Relative distribution by States of the hatching capacity of 11,405 hatcheries in the United States, July 1, 1934, according to capacity classes

[Arranged alphabetically]

State	Hatcheries with capacity under 10,000		Hatcheries with capacity from 10,000-24,999		Hatcheries with capacity from 25,000-39,999		Hatcheries with capacity from 40,000-59,999		Hatcheries with capacity from 60,000-99,999		Hatcheries with capacity from 100,000-199,999		Hatcheries with capacity from 200,000-499,999		Hatcheries with capacity from 500,000 and over		Total	
	Capa- city, eggs	Percent of total for State	Capa- city, eggs	Percent of total for State	Capa- city, eggs	Percent of total for State	Capa- city, eggs	Percent of total for State	Capa- city, eggs	Percent of total for State	Capa- city, eggs	Percent of total for State	Capa- city, eggs	Percent of total for State	Capa- city, eggs	Percent of total for State	Capa- city, eggs	Percent
Alabama.....	Thous. 159	14.9	Thous. 386	36.2	Thous. 189	17.8	Thous. 142	13.3	Thous. 138	29.4	Thous. 190	17.5	Thous. 190	17.5	Thous. 190	17.5	Thous. 1,066	100
Arizona.....	49	10.4	101	21.5	95	20.2	87	18.5	135	29.4	133	29.4	133	29.4	133	29.4	470	100
Arkansas.....	70	8.1	202	23.2	140	16.1	259	31.0	2,499	33.4	2,499	33.4	2,499	33.4	2,499	33.4	869	100
California.....	901	5.7	2,933	18.7	2,047	13.0	1,930	12.3	2,406	15.9	3,318	21.1	2,092	13.3	15,720	100	15,720	100
Colorado.....	159	6.6	515	21.4	293	12.1	503	20.9	800	33.4	136	5.6	136	5.6	2,412	100	2,412	100
Connecticut.....	335	13.2	697	27.5	272	8.8	217	9.8	301	11.9	104	4.1	104	4.1	2,532	100	2,532	100
Delaware.....	69	3.7	226	12.2	322	17.4	180	9.7	760	41.0	297	16.0	297	16.0	1,854	100	1,854	100
Florida.....	173	17.4	350	34.9	90	9.0	103	10.3	173	17.2	113	11.2	227	17.2	1,816	100	1,816	100
Georgia.....	151	11.5	531	40.3	310	23.6	88	7.4	389	33.0	133	11.3	133	11.3	1,310	100	1,310	100
Idaho.....	127	10.8	235	19.9	208	17.6	88	7.4	389	33.0	133	11.3	133	11.3	1,310	100	1,310	100
Illinois.....	707	3.4	2,182	10.5	2,544	12.3	3,625	17.5	3,801	28.2	2,708	13.1	2,978	14.4	2,172	10.5	20,717	100
Indiana.....	794	4.6	2,435	14.2	2,890	16.9	2,378	13.9	3,797	22.2	2,344	13.7	1,946	11.4	523	3.1	17,407	100
Iowa.....	935	4.3	3,099	14.4	2,939	13.8	4,820	22.4	3,882	18.0	3,057	14.2	2,783	12.9	21,535	100	21,535	100
Kansas.....	943	6.8	3,086	14.7	2,324	16.8	2,167	15.7	2,249	16.3	2,895	21.0	1,194	8.7	13,809	100	13,809	100
Kentucky.....	127	7.3	492	28.4	252	14.5	282	16.3	63	3.6	173	34.2	173	34.2	517	29.9	1,733	100
Louisiana.....	71	14.1	171	33.9	90	17.8	84	7.0	173	34.2	173	34.2	173	34.2	505	100	505	100
Maine.....	640	53.8	466	39.2	84	7.0	448	15.8	466	16.4	466	16.4	466	16.4	1,190	100	1,190	100
Maryland.....	272	9.6	686	24.2	505	17.8	448	15.8	466	16.4	466	16.4	466	16.4	2,835	100	2,835	100
Massachusetts.....	915	23.5	1,302	33.5	611	14.7	147	3.8	160	4.1	353	9.1	400	10.3	3,888	100	3,888	100
Michigan.....	660	6.1	2,015	18.7	2,068	19.2	2,182	20.3	2,448	22.8	1,386	12.9	1,386	12.9	10,759	100	10,759	100
Minnesota.....	591	3.8	2,103	13.6	1,648	10.6	2,740	17.7	2,111	13.6	2,353	15.2	2,888	18.6	1,063	6.9	15,497	100
Mississippi.....	101	11.4	265	29.8	264	29.7	189	21.3	69	7.8	69	7.8	69	7.8	888	100	888	100
Missouri.....	870	4.7	1,567	8.5	1,646	8.9	1,474	8.0	2,285	12.4	2,054	11.2	3,557	19.3	4,962	27.0	18,415	100
Montana.....	50	17.4	87	30.2	151	52.4	151	52.4	151	52.4	151	52.4	151	52.4	288	100	288	100
Nebraska.....	359	3.8	1,771	18.7	1,155	12.2	2,452	25.8	1,671	17.6	939	9.9	482	5.1	658	6.9	9,487	100
Nevada.....	4	17.4	19	82.6	163	8.9	129	7.1	76	4.2	1,054	19.4	488	26.7	23	23	9,487	100
New Hampshire.....	427	23.4	542	29.7	685	12.7	664	12.3	647	11.9	1,054	19.4	488	26.7	1,825	100	1,825	100
New Jersey.....	501	9.3	1,088	20.1	664	12.7	664	12.3	647	11.9	1,054	19.4	488	26.7	5,411	100	5,411	100
New Mexico.....	24	5.1	1,021	21.8	91	19.4	55	11.7	1,103	15.5	198	42.1	772	14.3	470	100	470	100
New York.....	1,326	18.6	2,351	32.8	1,91	16.7	677	9.5	1,103	15.5	232	3.5	235	3.4	7,135	100	7,135	100
North Carolina.....	218	17.1	692	52.0	237	18.6	41	3.2	144	14.4	115	9.1	115	9.1	1,273	100	1,273	100
North Dakota.....	72	7.2	313	31.2	237	18.6	323	32.2	144	14.4	151	15.0	151	15.0	1,008	100	1,008	100

Ohio.....	1, 196	4. 3	3, 475	12. 6	3, 635	13. 2	3, 668	13. 3	4, 716	17. 2	5, 108	18. 8	4, 728	17. 2	943	3. 4	27, 529	100
Oklahoma.....	273	4. 5	1, 379	22. 5	3, 987	16. 1	1, 412	23. 1	958	15. 7	872	14. 3	233	3. 8	---	---	6, 114	100
Oregon.....	431	12. 5	1, 826	23. 9	477	13. 8	1, 143	4. 2	813	23. 5	426	12. 3	340	9. 8	---	---	3, 456	100
Pennsylvania.....	1, 231	8. 5	3, 157	21. 9	2, 232	15. 4	2, 351	16. 3	2, 356	16. 3	1, 784	12. 4	1, 334	9. 2	---	---	14, 445	100
Rhode Island.....	109	30. 8	110	34. 3	27	8. 4	85	26. 5	---	---	---	---	---	---	---	---	321	100
South Carolina.....	169	16. 2	285	27. 2	241	23. 0	54	5. 2	60	5. 7	238	22. 7	---	---	---	---	1, 047	100
South Dakota.....	92	2. 6	646	17. 9	620	17. 2	1, 188	32. 9	602	16. 7	246	6. 8	214	5. 9	---	---	3, 508	100
Tennessee.....	97	4. 6	348	16. 5	135	6. 4	1, 235	11. 1	456	21. 6	597	28. 2	245	11. 6	---	---	2, 113	100
Texas.....	707	5. 6	4, 060	32. 4	2, 564	20. 5	2, 238	17. 9	1, 133	9. 0	914	7. 3	300	2. 4	608	4. 9	12, 524	100
Utah.....	83	3. 6	82	3. 6	105	11. 2	233	17. 2	154	10. 4	465	31. 5	272	18. 5	---	---	1, 474	100
Vermont.....	100	50. 6	91	28. 8	25	7. 9	40	12. 7	---	---	---	---	---	---	---	---	316	100
Virginia.....	328	8. 5	787	20. 3	918	23. 8	324	8. 4	465	12. 0	622	16. 1	420	10. 9	---	---	3, 864	100
Washington.....	469	8. 8	1, 146	21. 5	554	10. 4	391	11. 1	765	14. 4	1, 468	27. 5	338	6. 3	---	---	5, 331	100
West Virginia.....	123	25. 9	92	19. 4	32	6. 8	98	20. 7	---	---	129	27. 2	---	---	---	---	474	100
Wisconsin.....	829	8. 9	2, 283	24. 6	1, 396	15. 1	1, 159	12. 5	1, 867	20. 2	1, 552	13. 5	480	5. 2	---	---	9, 266	100
Wyoming.....	21	13. 5	44	28. 2	39	25. 0	52	33. 3	---	---	---	---	---	---	---	---	156	100
District of Columbia.....	---	---	33	100	---	---	---	---	---	---	---	---	---	---	---	---	33	100
Total, United States.....	19, 110	6. 9	50, 774	18. 4	39, 370	14. 2	42, 481	15. 4	44, 744	16. 2	38, 790	14. 0	28, 946	10. 5	12, 072	4. 4	276, 287	100

A comparison between the number of chickens raised on farms in each of the 20 regions and the hatching capacity of these regions is shown in table 14. Similar information was shown earlier in this section for every State individually. This ratio is very uneven for the country as a whole, ranging from a capacity of over 82 eggs per 100 chickens raised in Ohio and over 70 in California to only 11 in region 5, comprised of the States of Kentucky, Tennessee, and North Carolina, and 13 in region 6, comprised of Mississippi, Alabama, Georgia, South Carolina, and Florida. For the country as a whole this ratio is 41.7.

TABLE 14.—*Hatchery capacity, July 1, 1934, per 100 chickens raised on farms in 1933 for 11,405 hatcheries in the United States*

[By 20 regions]

Region	Total capacity of hatcheries in the regions	Chickens raised on the farms of the region in 1933	Hatching capacity per 100 chickens raised	Region	Total capacity of hatcheries in the regions	Chickens raised on the farms of the region in 1933	Hatching capacity per 100 chickens raised
	<i>Thousands</i>	<i>Thousands</i>			<i>Thousands</i>	<i>Thousands</i>	
1.....	15,720	22,223	70.74	12.....	13,964	34,169	40.87
2.....	12,378	28,896	42.84	13.....	27,529	33,370	82.51
3.....	12,994	33,842	38.40	14.....	10,759	20,579	32.28
4.....	7,488	36,477	20.53	15.....	17,107	29,482	58.03
5.....	5,119	45,428	11.27	16.....	20,717	37,622	58.07
6.....	5,321	40,844	13.03	17.....	21,535	50,234	42.87
7.....	14,098	47,209	29.86	18.....	18,415	37,853	48.65
8.....	16,221	41,276	39.30	19.....	15,497	28,324	54.71
9.....	7,451	24,288	30.68	20.....	9,266	22,747	40.74
10.....	9,756	17,554	55.57				
11.....	14,919	30,133	49.51	Total, United States.	1 276,254	662,550	41.70

¹ This total is exclusive of the District of Columbia.

INTERSTATE CHARACTER OF THE COMMERCIAL AND BREEDER HATCHERY INDUSTRY

The obvious conclusion from an analysis of the geographical distribution of hatcheries in the United States is that while the industry is scattered throughout the country with hatcheries located in every State in the Union, nevertheless both the number of hatcheries and hatchery capacity are exceedingly unevenly distributed. The uneven distribution of hatcheries and of hatchery capacity gives rise to a substantial amount of interstate commerce in baby chicks.

The shipment of baby chicks over rather long distances is possible because the baby chick, when hatched, contains in its body sufficient nourishment for approximately 72 hours, and, therefore, requires no food or water for a period of 2 or 3 days while in transit. Because baby chicks are physically adapted to transportation over long distances, the United States postal authorities admitted them to the mails on May 15, 1918, and since that time it has been possible to ship baby chicks by parcel post as well as by express to all points in the United States. Since 1918, many improvements have been made in the type of container used for the shipment of baby chicks. These improvements, which decreased mortality of chicks in transit, further encouraged the shipment of chicks over long distances. Boxes have been developed in which chicks may be shipped for many miles with a minimum of damage or loss.

In the hatchery industry it is customary to contract for chicks prior to the day of hatching, and therefore the chicks are usually shipped to their destination within a few hours after they are hatched. It is not at all uncommon to ship chicks by rail to points so far distant that shipments require 40 to 72 hours in transit. In some cases chicks are delivered by airplanes.

It is estimated that in the United States approximately half of all the chickens raised on farms in 1934 were hatched in commercial and breeder hatcheries by means of artificial incubation.

It was pointed out above that the hatchery capacity is very unevenly distributed throughout the country. During the 1934 season, the hatcheries in the State of Delaware, where many winter broilers are produced, hatched approximately 142 chicks for every 100 chickens raised on farms, while hatcheries in the State of Arkansas hatched less than 10 chicks for every 100 chickens raised on Arkansas farms. It is, therefore, obvious that some States hatch far in excess of their own requirements, and that other States do not hatch nearly enough to satisfy their local requirements. Table 15, showing the estimated number of salable chicks produced by hatcheries in 1934 in relation to the number of chickens raised on farms in 1933, indicates clearly the uneven distribution of chick production by hatcheries throughout the country. The obvious fact is that chicks must be shipped from States producing considerably in excess of their local requirements to States which produce only a fraction of the number of chicks required by their poultry industry.

Another reason why interstate commerce in baby chicks is desirable is that there is considerable specialized poultry breeding in some sections. The hatcheries on the Pacific coast, for instance, are known throughout the country for their ability to produce a high grade of Leghorn chicks. The New England States have a well-established reputation for producing high-quality chicks of heavy breeds, such as Rhode Island Reds, New Hampshire Reds, and Plymouth Rocks. Most of the Southern States depend upon the Middle West States for chicks of the heavy breeds. Other sections of the country have specialized in crossing pure strains and marketing hybrid chicks. It can be readily seen, therefore, that there is considerable shipping of chicks from one section of the country to another in order to maintain flocks of particular breeds.

The intention on the part of many hatcheries to sell chicks to poultrymen located in far-distant States is obvious from the volume and character of advertising done by many hatcheries. Wide circularization, by means of post card, leaflet, and letter, of prospective customers located in numerous States other than the one in which the advertising hatchery is located is the rule. In addition, many of the larger hatcheries advertise in national poultry and farm papers and periodicals. Scores of hatchery advertisements appear in the various poultry magazines which circulate in every State of the United States and in many foreign countries. Some poultry or farm periodicals, with an almost entirely local circulation, carry considerable advertising by hatcheries located in other States. Such advertising, therefore, appears to be inserted solely with the intention of soliciting orders from poultry producers located in distant States.

TABLE 15.—*Estimated number of salable chicks produced by 1,263 hatcheries in 1934 in relation to the number of chickens raised on farms in 1933*

[By States]

State	Estimated hatchery capacity in 1934 ¹	Rate of capacity utilization ²	Estimated number of eggs set by hatcheries (columns 1×2)	Percent of hatchability ²	Estimated production of chicks (columns 3×4)	Estimated allowance for mortality of 20 percent ³	Estimated number of livable chicks sold by hatcheries (columns 5-6)	Number of chickens raised on farms in 1933 ⁴	Estimated percent of chicks sold in 1934 to chicks raised on farms in 1933
	1	2	3	4	5	6	7	8	9
	<i>Thousands</i>		<i>Thousands</i>		<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>	
Alabama.....	1,066	3.19	3,401	68.1	2,316	463	1,853	10,773	17.2
Arizona.....	470	2.14	1,006	58.7	591	118	473	1,015	46.6
Arkansas.....	869	1.83	1,590	75.9	1,207	241	966	10,318	9.4
California.....	15,720	2.22	34,898	65.1	22,719	4,644	18,175	22,223	81.8
Colorado.....	2,412	3.02	7,284	62.1	4,523	905	3,618	5,393	67.1
Connecticut.....	2,532	3.51	8,887	61.5	5,466	1,093	4,373	4,175	104.7
Delaware.....	1,854	3.70	6,860	65.2	4,473	895	3,578	2,525	141.7
Florida.....	1,004	2.50	2,510	63.5	1,594	319	1,275	2,763	46.1
Georgia.....	1,316	2.90	3,816	69.8	2,664	533	2,131	11,635	18.3
Idaho.....	1,180	2.56	3,021	59.2	1,788	358	1,430	3,317	43.1
Illinois.....	20,717	2.80	58,008	67.7	39,271	7,854	31,417	37,622	83.5
Indiana.....	717, 107	2.29	39,175	64.1	25,111	5,022	20,089	29,482	68.1
Iowa.....	21,535	2.75	59,221	56.8	33,638	6,728	26,910	50,234	53.6
Kansas.....	13,809	2.28	31,485	63.5	19,993	3,999	15,994	35,883	44.6
Kentucky.....	1,733	2.44	4,229	63.9	2,702	540	2,162	16,181	13.4
Louisiana.....	505	1.84	929	62.7	582	116	466	6,238	7.5
Maine.....	1,190	2.41	2,868	66.0	1,893	379	1,514	3,796	39.9
Maryland.....	2,835	2.91	8,250	63.9	5,272	1,054	4,218	7,042	59.9
Massachusetts.....	3,888	3.03	11,781	64.7	7,622	1,524	6,098	5,862	104.0
Michigan.....	10,759	2.93	31,524	61.0	19,230	3,846	15,384	20,579	74.8
Minnesota.....	15,497	2.23	34,558	63.9	22,083	4,417	17,666	28,324	62.4
Mississippi.....	888	2.36	2,096	74.5	1,562	312	1,250	8,948	14.0
Missouri.....	18,415	3.77	69,425	62.0	43,044	8,609	34,435	37,853	91.0
Montana.....	288	2.21	636	61.8	393	79	314	3,496	9.0
Nebraska.....	9,487	2.77	26,279	67.3	17,686	3,537	14,149	26,004	54.4
Nevada.....	23	2.21	51	61.8	32	6	26	420	6.2
New Hampshire.....	1,825	2.47	4,508	68.5	3,088	618	2,470	3,010	82.1
New Jersey.....	5,411	2.31	12,499	61.0	7,624	1,525	6,099	7,855	77.6
New Mexico.....	470	2.08	978	62.5	611	122	489	1,586	30.8
New York.....	7,135	1.63	11,630	56.8	6,606	1,321	5,285	22,616	23.4
North Carolina.....	1,273	2.19	2,788	69.7	1,943	389	1,554	14,114	11.0
North Dakota.....	1,003	1.56	1,565	60.1	941	188	753	7,335	10.3
Ohio.....	27,529	2.82	77,632	64.8	50,306	10,061	40,245	33,370	120.6
Oklahoma.....	6,114	1.83	11,119	61.5	6,881	1,376	5,505	19,921	27.6
Oregon.....	3,456	2.24	7,741	58.4	4,521	904	3,617	4,790	75.5
Pennsylvania.....	14,445	3.16	45,646	63.0	28,757	5,751	23,006	24,800	92.8
Rhode Island.....	321	2.59	831	64.6	537	107	430	712	60.4
South Carolina.....	1,047	2.52	2,638	68.8	1,815	363	1,452	6,725	21.6
South Dakota.....	3,608	1.88	6,783	67.2	4,558	912	3,646	13,870	26.3
Tennessee.....	2,113	2.23	4,712	65.2	3,072	614	2,458	15,133	16.2
Texas.....	12,524	1.57	19,663	66.4	13,056	2,611	10,445	32,256	32.4
Utah.....	1,474	1.68	2,476	58.6	1,451	290	1,161	3,633	32.0
Vermont.....	316	1.83	578	60.2	348	70	278	1,672	16.6
Virginia.....	3,864	3.28	12,674	65.7	8,327	1,665	6,662	16,746	39.8
Washington.....	5,331	2.23	11,888	66.6	7,917	1,583	6,334	10,868	58.3
West Virginia.....	474	2.30	1,090	66.0	719	144	575	5,333	10.8
Wisconsin.....	9,266	2.20	20,385	61.8	12,598	2,520	10,078	22,747	44.3
Wyoming.....	156	2.95	460	51.3	236	47	189	1,357	13.9
Total, United States.....	276,254	2.61	714,142	63.9	453,367	90,672	362,695	662,550	54.7

¹ Column 1 is based on hatchery capacity as shown on the mailing list of the National Commercial and Breeder Hatchery Coordinating Committee.² Figures in columns 2 and 4 were calculated by Poultry Section, A. A. A., U. S. Department of Agriculture, from reports submitted by 1,263 representative hatcheries located throughout the country.³ Column 6 is based on an estimate suggested by poultry specialists in the U. S. Department of Agriculture.⁴ "Estimates of chickens and eggs, 1931-34", Bureau of Agricultural Economics, U. S. Department of Agriculture.

In an effort to ascertain more exactly the interstate character of the hatchery industry, questionnaires were sent to 2,351 hatcheries, or approximately one-sixth of all the hatcheries in the United States. The 595 usable replies received indicate that approximately one-third of all the hatcheries in the United States shipped baby chicks during the 1934 season to States other than the one in which they are located. A further analysis of these replies indicates that over 20 percent of all the chicks hatched by hatcheries in the United States were sold in and shipped to States other than the ones in which they were hatched. Tables 16 and 17 show the estimated percent of hatcheries doing interstate business and the estimated percent of baby chicks produced by hatcheries which moved in interstate commerce in 1934 on the basis of the 20 regions described in the preceding section.

TABLE 16.—*Estimated percent of hatcheries in the United States doing interstate business in 1934, based on questionnaires from 595 hatcheries*

[By 20 regions]

Region	States comprising the region	Percent of hatcheries in the region doing interstate business
1.....	California.....	17.1
2.....	Oregon, Washington, Idaho, Nevada, Arizona, Utah, Wyoming, Montana.....	48.7
3.....	Texas, New Mexico.....	29.7
4.....	Oklahoma, Arkansas, Louisiana.....	36.8
5.....	Kentucky, Tennessee, North Carolina.....	28.6
6.....	South Carolina, Georgia, Alabama, Mississippi, Florida.....	47.1
7.....	Nebraska, South Dakota, North Dakota.....	40.0
8.....	Kansas, Colorado.....	50.0
9.....	New York, Vermont.....	28.0
10.....	Maine, Massachusetts, New Hampshire, Rhode Island, Connecticut.....	46.7
11.....	Pennsylvania, West Virginia.....	24.4
12.....	Delaware, New Jersey, Maryland, Virginia, District of Columbia.....	42.1
13.....	Ohio.....	25.7
14.....	Michigan.....	29.4
15.....	Indiana.....	35.0
16.....	Illinois.....	18.5
17.....	Iowa.....	30.6
18.....	Missouri.....	36.0
19.....	Minnesota.....	23.5
20.....	Wisconsin.....	33.3
Total, United States.....	.....	33.3

TABLE 17.—*Estimated percent of baby chicks hatched in the United States moving in interstate commerce in 1934, based on questionnaires from 595 hatcheries*

[By 20 regions]

Region	States comprising the region	Percent of chicks moving in interstate commerce out of the region
1.....	California.....	4.0
2.....	Oregon, Washington, Idaho, Nevada, Arizona, Utah, Wyoming, Montana.....	33.4
3.....	Texas, New Mexico.....	2.8
4.....	Oklahoma, Arkansas, Louisiana.....	8.1
5.....	Kentucky, Tennessee, North Carolina.....	22.6
6.....	South Carolina, Georgia, Alabama, Mississippi, Florida.....	27.5
7.....	Nebraska, South Dakota, North Dakota.....	8.1
8.....	Kansas, Colorado.....	30.8
9.....	New York, Vermont.....	8.0
10.....	Maine, Massachusetts, New Hampshire, Rhode Island, Connecticut.....	49.9
11.....	Pennsylvania, West Virginia.....	19.3
12.....	Delaware, New Jersey, Maryland, Virginia, District of Columbia.....	14.9
13.....	Ohio.....	30.3
14.....	Michigan.....	32.5
15.....	Indiana.....	20.0
16.....	Illinois.....	14.1
17.....	Iowa.....	15.2
18.....	Missouri.....	38.8
19.....	Minnesota.....	8.2
20.....	Wisconsin.....	1.1
Total, United States.....		20.98

The results of this analysis are in close agreement with the results of other studies made from time to time by State and other institutions. For example, a study conducted in 1930 in Iowa⁸ indicated that approximately 29 percent of all the hatcheries in Iowa shipped chicks to States outside of that State. The results of this study indicate that 30.6 percent of all hatcheries in Iowa did interstate business in 1934.

For the United States as a whole the percentage of chicks shipped in interstate commerce to the total number of chicks produced by hatcheries was only 20 percent, yet some of the larger hatcheries shipped over 50 percent of their total production to other States. It can be seen, therefore, that interstate transportation of chicks is an important characteristic of the commercial and breeder hatchery industry.

FUNCTIONS OF HATCHERIES

Regardless of whether a hatchery is classified as a commercial hatchery or breeder hatchery or designated as a dealer or as one which is essentially a combination of types, it may perform any one or all of several functions.

In the first place, an efficient hatchery provides for an adequate and dependable source of egg supply. This may mean that the hatchery will contract with poultry producers for quantities of selected eggs to be delivered at specified periods. The hatchery which produces a dependable product will pay a substantial premium for these eggs in addition to the prevailing market price in consideration of a special quality and for special matings. Such a plan may entail

⁸ Does Iowa Need More Hatcheries? A survey of Iowa commercial chick hatcheries, by W. D. Termohlen, Iowa State College of Agriculture, Ames, Iowa, 1930, p. 7.

considerable supervision of the poultryman's flock by the hatchery in an effort to secure egg quality which will result in a higher hatchability and a superior quality chick.

On the other hand, a hatchery may own the flocks which supply a part or all of its egg requirements, and will spend considerable time and money on disease prevention and flock improvement programs.

Reports from 683 hatcheries indicate that, for the country as a whole, about 54.3 percent of all the hatcheries obtained at least a part of their total egg supply from their own flocks. However, only 17.4 percent of all the eggs set for hatching were produced by the flocks owned by hatcheries which set these eggs.

TABLE 18.—Percent of 683 hatcheries which own poultry flocks, and the percent of eggs set which were produced by hatchery-owned flocks in 1934

[By 10 regions]

Region	Percent of hatcheries which own flocks	Percent of eggs from own flocks to total eggs set	Region	Percent of hatcheries which own flocks	Percent of eggs from own flocks to total eggs set
1.....	71.8	34.0	7.....	45.8	5.1
2.....	42.3	19.4	8.....	42.4	9.4
3.....	62.5	21.2	9.....	34.4	3.1
4.....	32.7	7.2	10.....	56.4	20.5
5.....	82.4	27.6			
6.....	65.6	23.3	All regions.....	54.3	17.4

The importance of eggs from hatchery-owned flocks varies considerably from region to region. In regions 9, 7, 4, and 8, which comprise the States of heaviest farm poultry production in the mid-west, eggs from hatchery-owned flocks are only of minor importance. On the other hand, in regions 1, 5, and 6, which comprise the States of commercial poultry production on the Pacific coast, in the New England States and New York, and the Middle Atlantic States, eggs from the hatchery-owned flocks constitute a very significant part of all the eggs set for hatching. In the two regions making up the Southern States (regions 2 and 3), and also in Michigan, Minnesota, and Wisconsin (region 10), the eggs from flocks owned by the hatcheries also represent a considerable part of the total egg supply.

TABLE 19.—Percent of 683 hatcheries which own poultry flocks, and the percent of eggs set which were produced by hatchery-owned flocks in 1934

[By capacity classes]

Capacity groups	Percent of hatcheries which own flocks	Percent of eggs from own flocks to total eggs set	Capacity groups	Percent of hatcheries which own flocks	Percent of eggs from own flocks to total eggs set
Under 10,000.....	83.7	65.7	100,000 to 199,999.....	26.1	11.2
10,000 to 24,999.....	47.7	34.4	200,000 to 499,999.....	21.4	11.4
25,000 to 39,999.....	47.5	24.9	500,000 and over.....	33.3	1.9
40,000 to 59,999.....	32.9	14.4			
60,000 to 99,999.....	27.7	13.9	All capacity groups.....	54.3	17.4

As would be expected, the importance of eggs supplied by hatchery-owned flocks varies in direct relationship with the size of the hatchery. Hatcheries in the largest class as a rule buy practically all of their

eggs; hatcheries in the smallest class usually own poultry flocks and obtain over two-thirds of their total egg supply from their own flocks. Even in the case of hatcheries of the very largest capacity, a considerable proportion own poultry flocks although they may furnish only a small part of all the eggs used.

After the source of egg supply is established, either by contract with poultry producers, or an egg broker, or by maintaining flocks of its own, the hatchery is ready to perform its primary function, namely, that of hatching baby chicks, baby ducklings, or turkey poults by means of artificial incubation. Hatcheries may do such hatching at their own risk by setting their own eggs and soliciting customers for the baby chicks, or they may hire out their services and their equipment to poultry producers, undertaking to set the producers' eggs for incubation for a stipulated remuneration, turning over to the producers whatever chicks will hatch out of the eggs supplied by them.

This service is commonly known in the trade as custom hatching. Indeed, most hatcheries do both hatching at their own risk and custom hatching. All told, 13.7 percent of the eggs set by the 683 hatcheries reporting were set for custom hatching, although only 6.2 percent of the total income of hatcheries was received from this source. The importance of custom hatching varies in different sections of the country as may be seen from table 20.

TABLE 20.—*Percent of eggs custom hatched to total eggs set by 683 hatcheries in 1934*

[By 10 regions]

Region	Percent of eggs custom hatched to total eggs set	Region	Percent of eggs custom hatched to total eggs set	Region	Percent of eggs custom hatched to total eggs set
1.....	9.2	5.....	3.3	9.....	19.4
2.....	31.4	6.....	14.4	10.....	19.1
3.....	16.8	7.....	8.9		
4.....	27.6	8.....	12.8	All regions.....	13.7

TABLE 21.—*Percent of eggs custom hatched to total eggs set by 683 hatcheries in 1934*

[By capacity classes]

Capacity group	Percent of eggs custom hatched to total eggs set	Capacity group	Percent of eggs custom hatched to total eggs set
Under 10,000.....	18.2	100,000 to 199,999.....	8.9
10,000 to 24,999.....	22.6	200,000 to 499,999.....	3.5
25,000 to 39,999.....	21.9	500,000 and over.....	(¹)
40,000 to 59,999.....	24.9		
60,000 to 99,999.....	16.0	All capacity groups.....	13.7

¹ Less than 1.0.

The percentage of custom hatching in the different regions varied from only 3.3 percent of the total number of eggs set in region 5 (New England States and New York) to 31.4 percent in region 2 (South Central States). In regions 1 (Pacific coast and far western States), 7 (Ohio), and 5, less than 10 percent of all eggs set were custom hatched. On the other hand, more than 25 percent of the eggs set were custom hatched in region 2 and in region 4 (Northwestern States).

Custom hatching represented a much larger proportion of total hatching in the case of small hatcheries than in the case of large hatcheries, and there was a tendency for the proportion of eggs custom hatched to decrease as the size of hatcheries increased. However, the very small hatcheries did less custom hatching than those with capacities between 10,000 and 60,000.

In addition to hatching baby chicks, many hatcheries also brood the chicks and sell them started, that is, after they are fed and watered. Many hatcheries specialize in this activity and sell considerable numbers of older chicks, although as a general rule this operation is carried on merely because purchase orders are not at hand when the chicks are hatched. For the 683 hatcheries reporting, 4.5 percent of their income was received from the sale of started chicks.

Hatcheries also buy chicks from other hatcheries for resale and frequently deal in hatching eggs, poultry feed, and poultry equipment and supplies.

The sale of merchandise, not including chicks or eggs, accounted for 5.3 percent of the total income of the 683 hatcheries.

Table 22, showing average sources of hatchery income as reported by 683 hatcheries, indicates the relative importance of the several hatchery functions in the different regions.

TABLE 22.—*Sources of hatchery income for 683 hatcheries in 1934*

[By 10 regions]

Region	Income from sale of baby chicks	Income from sale of started chicks	Income from custom hatching	Income from sale of various merchandise	Income from miscellaneous source	Total income
	<i>Percent of total</i>	<i>Percent of total</i>	<i>Percent of total</i>	<i>Percent of total</i>	<i>Percent of total</i>	
1.....	88.4	3.1	4.1	1.6	2.8	100
2.....	63.0	10.8	17.7	7.6	.9	100
3.....	67.6	8.5	7.6	15.2	1.1	100
4.....	65.9	5.6	13.4	13.0	2.1	100
5.....	96.7	.9	1.3	.4	.7	100
6.....	83.8	4.9	6.6	3.3	1.4	100
7.....	80.9	8.6	4.5	3.5	2.5	100
8.....	80.9	3.0	6.2	7.3	2.6	100
9.....	72.3	5.9	9.1	8.9	3.8	100
10.....	71.4	5.0	9.5	11.2	2.8	100
All regions.....	81.8	4.5	6.2	5.3	2.2	100

Table 22 indicates, for example, that the sale of started chicks was an activity of considerable importance in the Southern States (regions 2 and 3) and in Ohio (region 7), while in New England States and New York (region 5), in Indiana and Illinois (region 8), and on the Pacific coast (region 1), it was of very minor importance. Custom hatching was particularly important in the South Central States (region 2), and also in the Northwestern States (region 4), but again neither in New England nor on the Pacific coast was this a significant source of income.

In several regions, notably 3 (Southeastern States), 4 (Northwestern States), and 10 (Michigan, Minnesota, and Wisconsin), the sale of supplies and other merchandise accounted for quite an appreciable percentage of total income.

In the New England States and New York the various hatchery activities, other than the sale of baby chicks, were of very minor importance. Only 3.3 percent of the total income of hatcheries in New England was derived from such activities. In the far western and Pacific coast States (region 1), only 11.6 percent of the total income of hatcheries was obtained from activities other than the sale of baby chicks. On the other hand, in South Central States, 37 percent of the total hatchery income was derived from such activities as custom hatching, selling started chicks, and trade in various accessories. Also, the income from miscellaneous operations accounted for 34.1 percent of the total hatchery income in the Northeastern States (region 4), and 32.4 percent in the Southeastern States (region 3).

This information is shown graphically in figure 7, where the various sources of hatchery income are shown in relation to the total income from all hatchery operations.

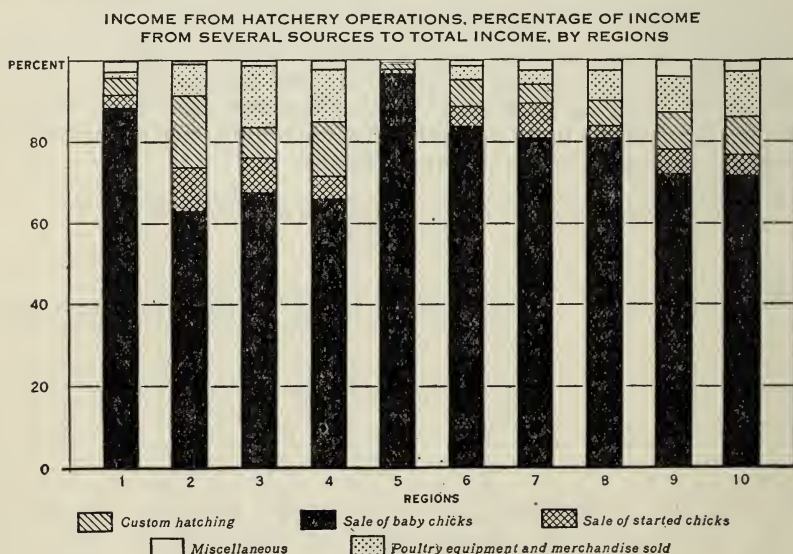


FIGURE 7.—Sources of hatchery income, 1934, by 10 regions

HATCHING EFFICIENCY

The efficiency of hatching operations depends upon a number of factors. In this study, however, only two of the most important factors will be considered. These two factors are hatchability and the utilization of egg-setting capacity.

HATCHABILITY

When a hen sets on the number of eggs she can conveniently cover it is not uncommon for her to hatch every single egg. With artificial incubation, however, 100 percent hatching seldom occurs. A certain number of eggs show no germ growth, others partially develop the embryo but die before reaching the stage where the chick breaks its way out of the shell, and still others do not hatch into salable chicks. When we divide the total number of salable chicks hatched by the total number of eggs set we get the percentage of hatchability.

This hatchability depends on the quality and inherent tendencies in the egg and the outside factors which are under the control of the hatchery operator. Such factors include care in handling and turning the eggs, age of the eggs when placed in the incubator, and temperature and humidity during the process. Efficiency in management goes a long way toward control of such conditions, yet it is possible for an efficient hatchery to obtain a rather low percentage of hatchability for the season. This plant may specialize in a breed or strain of chicks that has inherited poor hatchability, or it may produce very early or very late chicks which are known to show a lower hatchability than chicks produced in nature's favorite season—the spring months. The equipment may be inefficient or difficult to regulate and thus the number of living chicks may be reduced. In spite of all these handicaps the hatchery may yield the owner a profit which would make it inadvisable for him to change his breed of chicks, his date of hatching, or his incubator equipment.

In the final analysis, the purchase price of the eggs and the percentage of hatchability determine the egg cost per chick. For example, if the hatcheryman buys eggs for setting at \$3 per 100 and if his percentage of hatchability is 50 percent, it would be necessary for him to set 200 eggs for every 100 chicks and his egg cost per 100 chicks would be \$6. If, on the other hand, his hatchability is 70 percent, the cost of the same eggs would be only about \$4.29 per 100 chicks hatched. This, of course, should furnish a powerful incentive to the hatcheryman to increase his efficiency to the highest possible point in order to obtain a higher percentage of hatchability and thus lower his egg cost per 100 chicks hatched.

The 683 hatcheries, the operations of which are analyzed in this study, reported percentages of hatchability ranging from 32.8 percent to 93.2 percent. However, in spite of this wide range, there is a definite tendency for these percentages of hatchability to group somewhere around 60 to 70 percent. Table 23 shows the average percentage of hatchability for hatcheries in different regions. The average hatchability for each region was calculated by dividing the total number of chicks hatched by the total number of eggs set as reported by all the hatcheries in the region answering the questionnaires. The second column shows the lowest as well as the highest percentage of hatchability for each region.

TABLE 23.—Percent of chicks hatched to number of eggs set in 683 hatcheries, 1934

[By 10 regions]

Region	Percent of chicks hatched to eggs set	Range in percent of chicks hatched to eggs set	Region	Percent of chicks hatched to eggs set	Range in percent of chicks hatched to eggs set
1.....	63.7	42.0-93.2	7.....	64.9	36.7-89.3
2.....	65.0	42.7-92.9	8.....	66.8	38.7-87.5
3.....	66.8	42.7-81.0	9.....	60.5	38.4-83.6
4.....	64.7	46.3-78.2	10.....	62.2	40.2-75.4
5.....	65.4	49.8-88.2			
6.....	62.5	32.8-88.7	All regions.....	64.0	32.8-93.2

The average percentages of hatchability show so little variation from region to region that for all practical purposes the differences

may be considered insignificant. Region 9, which is comprised of Iowa and Missouri, had a somewhat lower average hatchability than the other regions, while region 3 (the Southeastern States) and region 8, which is comprised of the States of Indiana and Illinois, showed the highest average hatchability. Serious drought conditions in sections west of the Mississippi in all probability lowered the percentage of hatchability in these regions during 1934.

In table 24 the average hatchability of hatcheries is classified according to capacity groups.

TABLE 24.—*Percent of chicks hatched to number of eggs set in 683 hatcheries, 1934*

[By capacity classes]

Capacity groups	Percent of chicks hatched to eggs set	Range in percent of chicks hatched to eggs set	Capacity groups	Percent of chicks hatched to eggs set	Range in percent of chicks hatched to eggs set
Under 10,000.....	61.6	32.8-88.5	100,000 to 199,999.....	68.0	52.2-79.7
10,000 to 24,999.....	62.0	39.1-89.3	200,000 to 499,999.....	65.9	54.8-76.5
25,000 to 39,999.....	62.3	138.4-93.2	500,000 and over.....	64.0	61.9-70.9
40,000 to 59,999.....	62.7	141.4-92.9			
60,000 to 99,999.....	62.4	46.3-75.6	All capacity groups.....	64.0	32.8-93.2

¹ Of the 2 hatcheries reporting the remarkably high percentages of hatchability of 93.2 percent and 92.9 percent, one is located on the Pacific coast and the other one in the South.

This table shows that there was a decided tendency for the percentage of hatchability to increase gradually as the capacity of the hatcheries increased. The highest percentage of hatchability was found in hatcheries with capacities ranging from one to two hundred thousand. This fact is perhaps significant because it is the hatcheries of this size which require the full-time attention of one man. The percentage of hatchability began to drop again for hatcheries with more than 200,000 capacity, but remained higher than for hatcheries with less than 100,000 capacity. It is also significant that the range in hatchability, or the difference between the lowest and the highest percentage of hatchability in any one group, showed a tendency to become narrower as the capacity of the hatcheries increased. In other words, the range in the large capacity groups was not as large as it was in the smaller ones.

UTILIZATION OF EGG SETTING CAPACITY

Another important factor determining the efficiency of hatchery operations is the number of times the total capacity of the hatchery is utilized during the hatching season.

The incubation period lasts 21 days. This in itself places a rather definite limitation upon the possible utilization of the setting capacity. In most sections of the country the hatching season rarely begins before late February and usually ends about the beginning of June. Efforts are made by some hatcheries to extend the hatching season further into the summer and back into the winter. But, for the country as a whole, the duration of the hatching season is still only from 3 to 4 months—that is, from 90 to 120 days. An efficient, wide-awake hatcheryman should then be able to utilize his setting capacity from 4½ to 6 times during the normal hatching season.

In practice, however, we find that the utilization of setting capacity varied widely from one hatchery to another within any one region. The variation was also very considerable when average figures for the different regions were compared. For example, the 683 hatcheries showed a variation in the utilization of setting capacity from 0.27 to 8.69. This means that some of the hatcheries did not utilize their capacity even once, but throughout the season set less than half of their capacity, while other hatcheries utilized their capacity more than eight times. In other words, with a given capacity of 10,000 eggs, the hatchery with the lowest percentage of utilization would set only 2,700 eggs throughout the season, while the hatchery with the highest rate of capacity utilization would set 86,900 eggs.

Table 25 illustrates how the average rate of capacity utilization varied from region to region. It also shows the range between the lowest and highest rates of utilization in each of the regions. The average for each region was obtained by dividing the total number of eggs set by the total setting capacity of the region.

TABLE 25.—*Utilization of setting capacity in 683 hatcheries in 1934*

[By 10 regions]

Region	Average number of eggs set per unit of capacity	Range in number of eggs set per unit of capacity	Region	Average number of eggs set per unit of capacity	Range in number of eggs set per unit of capacity
1-----	2.31	0.75-6.37	7-----	2.81	0.86-6.54
2-----	1.60	.27-4.73	8-----	2.60	.86-5.48
3-----	2.75	1.08-7.54	9-----	3.32	.89-5.48
4-----	2.42	.72-7.62	10-----	2.39	1.01-4.98
5-----	2.22	.77-5.24			
6-----	3.11	.50-8.69	All regions-----	2.77	.27-8.69

As the table indicates, the rate of capacity utilization for the country as a whole was 2.77.⁹

Region 9 (Iowa and Missouri) has the highest average rate of capacity utilization. In these States, on the average of 3.32 eggs were set for each unit of capacity.¹⁰ Region 6 (North Atlantic States) also used its capacity quite efficiently, which was probably due, at least to some extent, to a double hatching season because of the winter broiler season and the spring flock replacement season. Hatcheries in the South Central States (region 2) set, on the average, only 1.6 eggs for each unit of capacity. Both the lowest and the highest rates of utilization reported for the South Central States were quite a bit lower than the respective lowest and highest rates of capacity utilization reported by other regions. Two hatcheries in the South Central States reported a rate of utilization lower than 0.5, which means that

⁹ This estimated rate of capacity utilization, along with the estimated percentage of hatchability discussed on preceding pages, makes it possible to estimate roughly in the following manner the number of chicks hatched during the season:

	Millions
Given an estimated setting capacity for the United States-----	276.00
Multiplied by the estimated rate of utilization-----	2.77
Gives the estimated number of eggs set-----	764.52
Adjusting by the estimated percentage of hatchability-----	64.0
Gives the estimated number of salable chicks hatched-----	489.29
Making an estimated adjustment for mortality on farms-----	20.0
Deducting the estimated allowance for mortality-----	97.86
Will give an estimated number of young chickens raised which were supplied by hatcheries-----	391.43

¹⁰ A unit of capacity is, of course, reckoned in terms of one egg.

if these hatcheries had a capacity of 10,000 eggs, they set, throughout the season, less than 5,000 eggs each. The highest rate of utilization reported for this region was 4.73. This would mean that if this hatchery had a capacity of 10,000 eggs, it would set 47,300 eggs during the season. This low utilization of capacity may be one of the important factors responsible for the fact that only 75 percent of the hatcheries in this region reported a profit for their 1934 operations.

Table 26 shows variations in the utilization of setting capacity, according to the size of hatcheries.

TABLE 26.—*Utilization of setting capacity in 683 hatcheries in 1934*

[By capacity classes]

Capacity group	Average number of eggs set per unit of capacity	Range in number of eggs set per unit of capacity	Capacity group	Average number of eggs set per unit of capacity	Range in number of eggs set per unit of capacity
Under 10,000.....	2.74	0.75-6.54	100,000 to 199,999.....	2.57	1.44-5.79
10,000 to 24,999.....	2.50	.50-8.69	200,000 to 499,999.....	3.25	1.82-5.48
25,000 to 39,999.....	2.61	.72-7.37	500,000 and over.....	(1)	(1)
40,000 to 59,999.....	2.46	.40-4.73			
60,000 to 99,999.....	2.33	.27-7.62	All capacity groups.....	2.77	.27-8.69

¹ Only 3 hatcheries reported.

The variation from one capacity group to another is not as significant as the range of variation within any one capacity group. On the whole, there seems to be some indication that in hatcheries with more than 200,000 egg capacity the rate of utilization of setting capacity was greater than in smaller hatcheries. Another interesting fact is that no hatchery with a capacity of more than 100,000 eggs reported a lower rate of capacity utilization than 1.4. However, many of the smaller hatcheries showed a higher rate of utilization than some of the very large hatcheries reporting.

The economic importance of the utilization of setting capacity becomes at once apparent from a study of cost data. A good many of the items of cost such as rent, depreciation charges on equipment, interest, taxes, insurance, and to some extent even managerial labor, do not tend to increase proportionately with an increasing volume of business. It is estimated that these items of cost amount to from 10 to 20 percent of the total cost. It is therefore obvious that a greater utilization of setting capacity will result in lower operating costs per unit.

THE COST OF CHICK PRODUCTION

Any consideration of the cost of producing chicks must take into account the significant difference between hatching chicks commercially and doing custom hatching. In this study the costs of the two types of operation are considered separately.

COST OF COMMERCIAL HATCHING

Figures showing average costs of hatching chicks are of value to hatcherymen because such figures provide them with some basis for comparing their efficiency with that of other hatchery operators.

Several studies have been made at various times to determine the average cost of hatching chicks. However, it is generally realized that average cost figures published in previous studies are rather limited in their use because, as a rule, they reflect conditions only in certain sections of the country, usually only one State, and because, in almost every case, they are based on the cost figures of only a few hatcheries. In order to avoid these limitations, an effort was made to include in this study reports from a sufficient number of hatcheries to supply a fairly adequate sample comprised of hatcheries of various sizes and from every section in the country.

VARIABILITY OF COSTS

The most significant facts observed in the analysis of the reports from 683 hatcheries on their costs of operation during the 1934 hatching season are (1) that there was an extremely wide variation in costs from one hatchery to another, and (2) that this variation cannot be satisfactorily explained, either by the geographical location or by the size of the hatcheries.

The average cost of hatching chicks during the 1934 season for the country as a whole, as indicated by this study, was \$7.02 per 100 chicks, and yet, the costs to individual hatcheries ranged from somewhat less than \$4.50 to more than \$14 per 100. The principal element of hatching cost is, of course, the cost of eggs which are set for incubation. Therefore, the wide difference in costs should not be surprising since it may be largely accounted for by differences in egg cost and may be closely related to an intangible asset which is the quality of chicks hatched.

The hatchery which specializes in high quality chicks and pays 5 cents for each egg would naturally have a much higher cost than hatcheries which pay only 1 cent per egg. This difference in the cost of eggs has not been given adequate consideration in earlier studies because they covered only local areas in which fairly uniform egg costs prevail. The relationship between the prices paid for eggs and the total cost of hatching chicks will be considered in greater detail later.

Since there was this wide variation in costs from one hatchery to another, it was impossible to calculate one average cost figure which could be entirely representative of actual conditions even when such averages were calculated separately for hatcheries in the different regions and in the several capacity groups. Therefore, in order to make such average cost figures as useful as possible, two different averages were calculated.

In the first place, an average cost figure for each region was computed as follows: The costs of all the hatcheries in each region were added and this figure was divided by the total number of chicks hatched in the region. The result provided figures which are listed in table 27 under the heading "Average cost per 100 chicks."

The second average, shown in table 27 under the heading "Average of individual costs per 100 chicks", was figured by determining the cost of producing 100 chicks in each individual hatchery. These costs of individual hatcheries were then added and the sum divided by the number of hatcheries reporting.

The first of these averages is a more correct representation of the cost of hatching the majority of chicks in a given area while the second shows the average costs for the largest number of hatcheries in the region. The difference between these two averages is in itself a rather significant indication of the variability of costs.

In addition to the average of costs of individual hatcheries, the table shows the range within which the costs of approximately two-thirds of the reporting hatcheries fall. This range, being wide, gives another indication of the extreme variability of costs. Although the average of individual costs for the United States as a whole was \$6.85 per 100 chicks, about two-thirds of the 683 reporting hatcheries had costs ranging anywhere from \$4.94 to \$8.76. The remaining one-third showed costs either higher than \$8.76 or lower than \$4.94 per 100.

TABLE 27.—Average cost of producing 100 chicks in 683 hatcheries in 1934

[By 10 regions]

Region	Average cost per 100 chicks	Cost of individual hatcheries averaged	
		Average of individual costs per 100 chicks	Range within which average costs of approximately $\frac{2}{3}$ of the reporting hatcheries fall
1.....	\$8.54	\$7.43	\$5.67-\$9.19
2.....	6.11	6.29	4.99- 7.59
3.....	6.88	7.49	5.63- 9.35
4.....	5.82	5.96	4.78- 7.14
5.....	7.81	8.94	6.59-11.29
6.....	6.83	6.72	5.00- 8.44
7.....	6.80	6.66	4.98- 8.34
8.....	6.03	6.15	4.75- 7.55
9.....	6.31	6.08	4.37- 7.79
10.....	6.53	6.79	5.35- 8.23
All regions.....	7.02	6.85	4.94-8.76

The figures in table 27 shown in the column "Average costs per 100 chicks" are, as a matter of fact, weighted averages. If the majority of chicks hatched in the region were produced at a comparatively high cost, the average costs for the region were higher than the average of the costs of individual hatcheries. The converse is, of course, equally true. It can be seen, for instance, that on the Pacific coast (region 1) the hatcheries producing the largest number of chicks had higher costs than other hatcheries in this region. As a matter of fact, among the reports received from this region, two were from very large hatcheries whose costs of production were considerably higher than the costs of the smaller hatcheries. That is why the average cost for region 1 as a whole was \$8.54 per 100 chicks or \$1.11 higher than the average of individual costs for this region. To a much lesser extent, this was also true of regions 6, 7, and 9, as well as of the country as a whole.

On the other hand, in regions 5 and 3, the average for the region was lower than the average of individual costs. This means that the hatcheries producing the majority of chicks in these regions had comparatively lower costs. One very large hatchery in region 5 reported a considerably lower cost than the average of the

other hatcheries in this region, thus reducing the average cost for the region as a whole. This same condition was also true to a much lesser extent in regions 2, 4, 8, and 10. The differences between these two averages in 7 of the 10 regions is apparently not very significant.

The variations in chick costs from region to region are very largely due to the difference in prices paid for eggs. Hatcheries in New England States and New York (region 5) and on the Pacific coast (region 1) reported higher chick costs primarily because they paid relatively higher prices for their eggs. Hatcheries in the Northwest (region 4) reported the lowest chick cost, primarily because they had low egg costs, and chick costs were also low in the other regions where egg costs were low.

Table 28 presents similar averages calculated on the basis of the several capacity groups. The same procedure was used here as in table 27.

TABLE 28.—Average cost of producing 100 chicks in 683 hatcheries in 1934

[By capacity classes]

Capacity group	Average cost per 100 chicks	Costs of individual hatcheries averaged	
		Average of individual costs per 100 chicks	Range within which average costs of approximately $\frac{2}{3}$ of reporting hatcheries fall
Under 10,000.....	\$6.72	\$6.74	\$4.69-\$8.79
10,000 to 24,999.....	6.80	6.88	5.03- 8.73
25,000 to 39,999.....	6.64	6.77	4.99- 8.55
40,000 to 59,999.....	6.79	6.89	5.08- 8.70
60,000 to 99,999.....	6.83	7.21	5.42- 9.00
100,000 to 199,999.....	6.64	6.59	4.94- 8.24
200,000 to 499,999.....	6.82	6.94	6.01- 7.87
500,000 and over.....	8.58	10.47	(¹)
All capacity groups.....	7.02	6.85	4.94- 8.76

¹ Sample inadequate.

From this table it can be seen that there are only a few significant differences between the figures in the column "Average cost per 100 chicks" where average costs for a capacity group as a whole are shown, and the figures shown in the column "Average of individual costs per 100 chicks" where an average of the costs of individual hatcheries is presented. Only three usable reports were received from hatcheries with over 500,000 capacity and these three hatcheries are located in regions where egg costs are high. It appears that the size of the hatcheries had very little to do with the cost of hatching chicks.

ELEMENTS OF COST

The cost of eggs, labor costs, and such overhead items as rent, depreciation, insurance, interest, taxes, and repairs usually account for over three-fourths of the total cost of hatching chicks. The remaining 25 percent is accounted for by such items as advertising, flock improvement, boxes and supplies, heat, light and power, telephone and telegraph, postage, and delivery expenses.

The importance of egg cost as an element of total cost has been previously stressed and will be further discussed in the next section. Egg cost as used here is not the original cost of the eggs, but the proportionate part of total chick cost which is chargeable against eggs, including the necessary allowance for eggs which do not hatch.

Labor costs are generally second in importance only to egg costs. As presented here they include not only all labor and salary items, figured at not less than the minimum rates set forth in the code for the commercial and breeder hatchery industry, but also managerial salary and all family labor. Family labor is frequently a very important item of cost to hatcheries. Some hatcheries which neglect to give family labor due consideration in determining their cost of hatching chicks may show a profit on their operations, when, as a matter of fact, they may actually be losing money. In this study, therefore, only the reports which appeared to include all family labor along with other labor costs were used.

A careful analysis of the 683 individual reports made it clear that the particular items of expense vary greatly from one hatchery to another. Any average of such individual elements of cost would be of very little value for the purpose of comparing the particular cost items of one hatchery with an average of these costs for a number of other hatcheries. It was, therefore, decided to group together the items of cost which show very little variation from month to month for a particular hatchery, regardless of the amount of business done. Such items of nonvariable expense may not be the same in the case of all hatcheries, but in the great majority of cases these items are rent, depreciation,¹¹ interest, taxes, insurance, and repairs. It is believed that, as a general rule, these items of cost remain more or less fixed, regardless of the volume of business done.

Tables 29 and 30 show the average cost of hatching 100 chicks broken down according to egg cost, labor cost, nonvariable costs, and all other costs. The first of these tables presents this information by regions, and the second by capacity groups. Since many hatcheries do custom hatching for hire, in addition to regular commercial hatching, it has been necessary to make some adjustment for this factor in the calculation of commercial hatching costs, other than egg costs. This adjustment was made by subtracting from the total of these cost items a proportionate amount of expense chargeable against custom hatching. The proportionate amount of expense was determined on the basis of the percentage of eggs set for custom hatching to the total number of eggs set in each region.

¹¹ The rates of depreciation as used in this report are as follows:

Stone or concrete buildings, 2 percent; brick buildings, 2½ percent; frame buildings, 5 percent; incubators and hatchery equipment, 8 percent; office equipment, 7 percent; delivery equipment, 17½ percent.

These rates of depreciation were applied to the purchase price of buildings and equipment as reported by the hatcheries and this made it possible to use a uniform method in determining depreciation costs for all the hatcheries.

TABLE 29.—*Elements of cost of doing commercial hatching in 683 hatcheries in 1934*

[By 10 regions]

Region	Egg cost		Labor cost		Relatively non-variable costs		All other costs		Total cost	
	Per 100 chicks hatched	Percent of total cost	Per 100 chicks hatched	Percent of total cost	Per 100 chicks hatched	Percent of total cost	Per 100 chicks hatched	Percent of total cost	Per 100 chicks hatched	Percent
1.....	\$3.87	45.3	\$1.85	21.7	\$0.97	11.3	\$1.85	21.7	\$8.54	100
2.....	2.55	41.7	1.70	27.8	.98	16.0	.88	14.5	6.11	100
3.....	3.68	53.5	1.40	20.3	.79	11.5	1.01	14.7	6.88	100
4.....	2.83	48.6	1.29	22.2	.70	12.0	1.00	17.2	5.82	100
5.....	5.14	65.8	.76	9.7	.44	5.6	1.47	18.9	7.81	100
6.....	3.93	57.5	1.13	16.5	.59	8.6	1.18	17.4	6.83	100
7.....	3.15	46.4	1.31	19.3	.52	7.6	1.82	26.7	6.80	100
8.....	2.73	45.3	1.17	19.4	.54	9.0	1.59	26.3	6.03	100
9.....	2.95	46.8	1.22	19.3	.58	9.2	1.56	24.7	6.31	100
10.....	3.20	49.0	1.34	20.5	.75	11.5	1.24	19.0	6.53	100
All regions.....	3.55	50.6	1.29	18.4	.65	9.3	1.53	21.7	7.02	100

Table 29 shows the elements of hatching cost. It indicates that for the country as a whole the average egg cost per 100 chicks was just about 50 percent of the average total cost. There was, however, a variation in egg costs from \$2.55 per hundred chicks, or 41.7 percent of the average total cost, in region 2 (South Central States), to \$5.14 per hundred chicks, or 65.8 percent in region 5 (New York and New England States).

COST OF PRODUCING AND AVERAGE SELLING PRICE OF 100 CHICKS

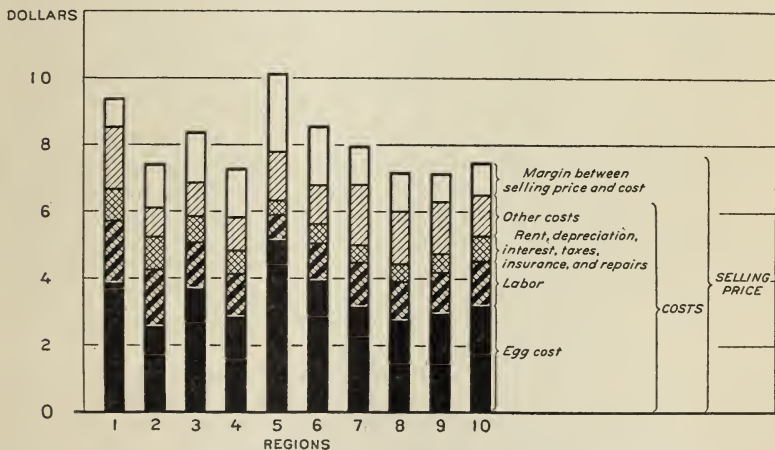


FIGURE 8.—The different elements of hatching cost and the margin between the average cost of producing 100 chicks and the average selling price, by 10 regions, 1934.

Labor costs for the country as a whole were \$1.29 per 100 chicks or 18.4 percent of total costs. These costs accounted for a larger percentage of total cost in region 2 (South Central States) and a much smaller percentage of total cost in region 5 (New York and New England States) than in any other regions. The region having the highest egg cost had the lowest labor cost, and that the one where egg cost was lowest had the next to the highest labor cost.

Nonvariable costs also differed considerably from region to region. The nonvariable costs were highest also in the region where egg cost was lowest, and lowest where the egg cost was highest. For the country as a whole, nonvariable costs amounted to \$0.65 per 100 chicks or 9.3 percent of the average total cost. There was, however, a variation between different regions ranging from 5.6 percent to 16 percent.

All other costs also showed considerable variation from region to region, but for the country as a whole they amounted to about 20 percent of the average total cost.

This information is shown graphically by regions in figure 8. This chart shows the margin between selling price and total cost as well as the various elements of cost. The total height of the columns represents the selling price per 100 chicks in the various regions.

Information in regard to the elements of cost is presented in table 30 according to the several capacity groups.

TABLE 30.—*Elements of cost of doing commercial hatching in 683 hatcheries in 1934*
[By capacity classes]

Capacity group	Egg cost		Labor cost		Relatively nonvariable costs		All other costs		Total cost	
	Per 100 chicks hatched	Per cent of total cost	Per 100 chicks hatched	Per cent of total cost	Per 100 chicks hatched	Per cent of total cost	Per 100 chicks hatched	Per cent of total cost	Per 100 chicks hatched	Per cent
Under 10,000.....	\$3. 47	51. 6	\$1. 42	21. 1	\$0. 84	12. 5	\$0. 99	14. 8	\$6. 72	100
10,000 to 24,999.....	3. 54	52. 1	1. 48	21. 8	. 77	11. 3	1. 01	14. 8	6. 80	100
25,000 to 39,999.....	3. 50	52. 7	1. 41	21. 2	. 74	11. 1	. 99	15. 0	6. 64	100
40,000 to 59,999.....	3. 39	49. 9	1. 40	20. 6	. 69	10. 2	1. 31	19. 3	6. 79	100
60,000 to 99,999.....	3. 47	50. 8	1. 28	18. 7	. 71	10. 4	1. 37	20. 1	6. 83	100
100,000 to 199,999.....	3. 36	50. 6	1. 28	19. 3	. 59	8. 9	1. 41	21. 2	6. 64	100
200,000 to 499,999.....	2. 99	43. 8	1. 03	15. 1	. 48	7. 0	2. 32	34. 1	6. 82	100
500,000 and over.....	4. 83	56. 3	1. 31	15. 3	. 63	7. 3	1. 81	21. 1	8. 58	100
All capacity groups.....	3. 55	50. 6	1. 29	18. 4	. 65	9. 3	1. 53	21. 7	7. 02	100

There was no significant variation in the percentage of average egg cost per 100 chicks to average total cost that could be definitely associated with the size of hatcheries. The highest percentage of egg cost was shown by the largest hatcheries with a capacity of 500,000 eggs and over, while the lowest percentage of egg cost was shown by the hatcheries just one capacity class smaller than the largest ones—from 200,000 to 500,000 eggs. All other hatcheries showed very little variation in egg cost from one capacity group to another.

Labor costs show a very definite tendency to become proportionally smaller as the size of the hatcheries increased. The group of hatcheries with capacities ranging from 200,000 to 500,000 eggs showed the lowest percentage of labor cost as well as of egg cost.

The nonvariable costs also showed a decided tendency to decrease proportionally as the size of the hatcheries increased. As in the case of egg cost and labor cost, this group of items of expense was also lowest in the 200,000 to 500,000 capacity group.

Under "other costs" were grouped together such items as advertising and flock improvement, as well as numerous other miscellaneous expenses. These costs showed a very decided tendency to increase as the capacity of the hatcheries increased. Apparently, as the size of the hatcheries increased, larger and larger sums of money were ex-

pended in advertising, sales effort, and similar items. These costs showed a sharp increase from hatcheries with less than 200,000 capacity to those with capacities from 200,000 to 500,000. There was some decrease in these costs for the three hatcheries with the very largest capacity.

For the country as a whole, then, bearing in mind the rather wide variation from region to region and from one capacity group to another, this study indicates that the cost of eggs was approximately 50 percent of the total cost, labor about 20 percent, the more or less nonvariable expenses about 10 percent, and miscellaneous expenses the remaining 20 percent of total cost.

RELATION OF EGG COST TO TOTAL COST

In considering the relation of egg cost to total cost it is first necessary to understand what enters into the total cost of eggs. There are three factors influencing the cost of eggs per chick hatched. These are (1) the market price of eggs, (2) the premium paid for eggs, and (3) the hatchability of the eggs. It is customary in the hatchery industry to pay premiums for hatching eggs over and above the market price of eggs. These premiums to a large extent are reflected in the quality and genetic characteristics of the chicks produced. In some cases these premiums are paid on a sliding scale depending on the hatchability of the eggs. As previously noted, the percent of salable chicks hatched has a direct bearing on the cost of eggs per chick hatched. Hatchability is, therefore, a third important factor in addition to the market price of eggs and the premium paid for hatching eggs.

Table 31 shows average prices paid for eggs by hatcheries. These prices, as calculated from the reports submitted by 683 hatcheries, indicate a wide variation from one region to another in the level of market egg prices and premiums paid for hatching eggs. As a general rule the average egg cost per 100 chicks in a region tends to be high when the premium paid for eggs is high, and low when the premium is low. The figures in the last column, on average egg cost per 100 chicks, indicate how the egg cost per chick is increased by taking into consideration the hatchability of the eggs.

TABLE 31.—*Premiums paid for hatching eggs and average egg cost per 100 chicks in 1934*

[By 10 regions]

Region	Average price paid, not including premium		Average premium paid		Average price paid by hatchery per 100 eggs	Average egg cost per 100 chicks
	Dozen	Per 100	Dozen	Per 100		
1.....	\$0.179	\$1.49	\$0.121	\$1.01	\$2.50	\$3.87
2.....	.116	.97	.076	.63	1.60	2.55
3.....	.190	1.58	.098	.82	2.40	3.68
4.....	.131	1.09	.073	.61	1.70	2.83
5.....	.232	1.93	.128	1.07	3.00	5.14
6.....	.172	1.43	.116	.97	2.40	3.93
7.....	.164	1.37	.076	.63	2.00	3.15
8.....	.142	1.18	.074	.62	1.80	2.73
9.....	.128	1.07	.064	.53	1.60	2.95
10.....	.155	1.29	.073	.61	1.90	3.20
All regions.....	.178	1.48	.086	.72	2.20	3.55

Since the variation in hatchability from region to region was not very great, the effect of hatchability on variations in egg costs per 100 chicks from one region to another was not as great as that of the level of market egg prices or of premiums paid. In the New England States and New York (region 5), for instance, market egg prices were much higher than in any other section of the country and therefore the egg cost per 100 chicks was also higher than the premium alone would indicate. In the South Central States (region 2) the level of market egg prices was lower than in any other region, hence the average egg cost per 100 chicks was lower in this region than in regions 4, 7, 8, 9, and 10, where the average premium paid for hatching eggs was just as low or lower than in region 2.

The significance of egg cost as a factor affecting the total cost of hatching chicks can be shown by a scatter diagram (figure 9) in which the relationship between the egg cost per 100 chicks hatched and the

RELATION BETWEEN EGG COST PER 100 CHICKS AND
TOTAL COST OF HATCHING 100 CHICKS, BY REGIONS*

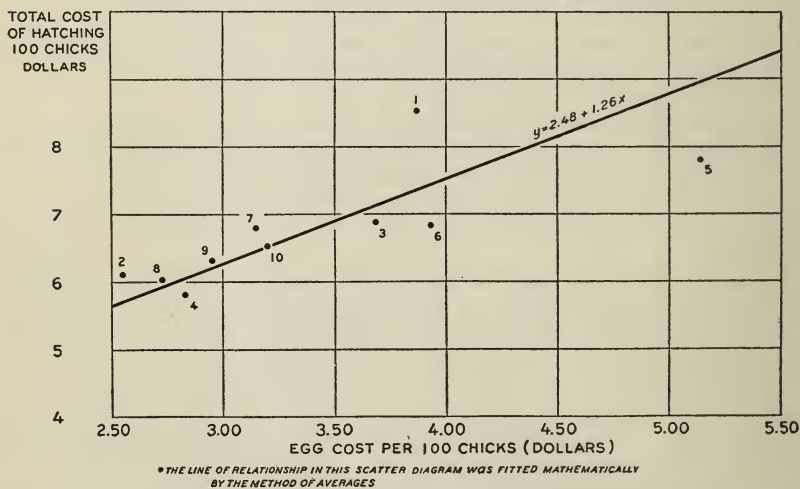


FIGURE 9.—The relation between average egg costs per 100 chicks and the total cost of hatching 100 chicks, 1934. Each dot represents 1 of the 10 regions.

total cost of hatching 100 chicks is graphically represented. In this scatter diagram, each dot represents a region and the number of the region is shown beside the dot. The egg cost per 100 chicks is measured on the horizontal scale and the total cost per 100 chicks is measured on the vertical scale. The sloping line represents the relationship between these two variables.

If the egg cost per 100 chicks were the only factor influencing the cost of chicks, every dot would fall on the diagonal line in the scatter diagram (fig. 9). It is not surprising, of course, that the dots do not fall right on the line of relationship. Deviations from the line are due to such factors influencing chick cost as labor costs and other items.

For example, the dot representing region 1 (Pacific coast and far Western States) indicates a much higher cost than would be expected from the egg cost per 100 chicks, considering the line of relationship. This is due to the fact that labor costs as well as all other costs were

higher in region 1 than in any other region. On the other hand, the dot representing region 5 (New York and the New England States), where total hatching cost was second highest in the country, nevertheless indicates a lower cost than one would expect, considering only the egg cost per 100 chicks in this region. This deviation is explained by the fact that region 5, because of the several peculiarities of the hatchery industry there, had the lowest labor cost in the country. The relatively nonvariable costs there were also the lowest, while all the other costs were just about average. The deviations of the dots representing some of the other regions can similarly be satisfactorily accounted for.

Figure 9 shows the relationship between egg cost and total hatching cost, by regions, without, however, considering such differences as may have existed in any one region among the several capacity groups. Table 32 is presented to illustrate such differences.

TABLE 32.—*Cost of hatching 100 chicks and egg cost per 100 chicks in 1934*

[By 10 regions and capacity classes]

REGION 1.—CALIFORNIA, OREGON, WASHINGTON, IDAHO, NEVADA, ARIZONA, UTAH, WYOMING, AND MONTANA

Capacity group	Cost per 100 chicks	Egg cost per 100 chicks	Percent egg cost is of total cost	Cost per 100 chicks not including egg cost
Under 10,000.....	\$6.87	\$3.68	53.6	\$3.19
10,000 to 24,999.....	7.48	4.05	54.1	3.43
25,000 to 39,999.....	6.92	3.79	54.8	3.13
40,000 to 59,999.....	8.27	3.97	48.0	4.30
60,000 to 99,999.....	7.33	4.31	58.8	3.02
100,000 to 199,999.....	8.50	4.83	56.8	3.67
200,000 to 499,999.....	8.21	3.63	44.2	4.58
All capacity groups.....	7.80	4.06	52.1	3.74

REGION 2.—NEW MEXICO, TEXAS, OKLAHOMA, ARKANSAS, AND LOUISIANA

Under 10,000.....	\$6.10	\$2.47	40.5	\$3.63
10,000 to 24,999.....	6.41	2.73	42.6	3.68
25,000 to 39,999.....	5.88	2.70	45.9	3.18
40,000 to 59,999.....	5.76	2.41	41.8	3.35
60,000 to 99,999.....	6.84	2.35	34.4	4.49
All capacity groups.....	6.11	2.55	41.7	3.56

REGION 3.—KENTUCKY, TENNESSEE, NORTH CAROLINA, SOUTH CAROLINA, GEORGIA, ALABAMA, MISSISSIPPI, AND FLORIDA

Under 10,000.....	\$7.24	\$3.69	51.0	\$3.55
10,000 to 24,999.....	7.09	3.65	51.5	3.44
25,000 to 39,999.....	6.42	3.59	55.9	2.83
40,000 to 99,999.....	7.25	3.95	54.5	3.30
All capacity groups.....	6.88	3.68	53.5	3.20

REGION 4.—NORTH DAKOTA, SOUTH DAKOTA, NEBRASKA, KANSAS, AND COLORADO

Under 10,000.....	\$6.23	\$2.91	46.7	\$3.32
10,000 to 24,999.....	6.17	2.81	45.5	3.36
25,000 to 39,999.....	6.00	2.72	45.3	3.28
40,000 to 59,999.....	5.93	2.82	47.6	3.11
60,000 to 99,999.....	5.81	3.04	52.3	2.77
100,000 to 199,999.....	5.36	2.47	46.1	2.89
All capacity groups.....	5.82	2.83	48.6	2.99

TABLE 32.—*Cost of hatching 100 chicks and egg cost per 100 chicks in 1934—Contd.*

REGION 5.—MAINE, MASSACHUSETTS, VERMONT, NEW HAMPSHIRE, RHODE ISLAND, CONNECTICUT, AND NEW YORK

Capacity group	Cost per 100 chicks	Egg cost per 100 chicks	Percent egg cost is of total cost	Cost per 100 chicks not including egg cost
Under 10,000	\$8.55	\$4.69	54.9	\$3.86
10,000 to 24,999	8.35	4.95	59.3	3.40
25,000 to 39,999	10.75	7.45	69.3	3.30
40,000 to 59,999	9.34	4.33	46.4	5.01
60,000 to 99,999	7.43	3.77	50.7	3.66
All capacity groups	8.45	4.70	55.6	3.75

REGION 6.—DELAWARE, NEW JERSEY, PENNSYLVANIA, DISTRICT OF COLUMBIA, VIRGINIA, MARYLAND AND WEST VIRGINIA

Under 10,000	\$6.39	\$3.56	55.7	\$2.83
10,000 to 24,999	6.51	3.60	55.3	2.91
25,000 to 39,999	6.52	3.63	55.7	2.89
40,000 to 59,999	6.60	3.82	57.9	2.78
100,000 to 199,999	7.38	4.40	59.6	2.98
All capacity groups	6.83	3.93	57.5	2.90

REGION 7—OHIO

Under 10,000	\$6.34	\$3.22	50.8	\$3.12
10,000 to 24,999	6.69	3.27	48.9	3.42
25,000 to 39,999	6.27	3.21	51.2	3.06
40,000 to 59,999	7.06	3.31	46.9	3.75
60,000 to 99,999	7.49	3.53	47.1	3.96
100,000 to 199,999	6.19	3.26	52.7	2.93
200,000 to 499,999	6.84	2.96	43.3	3.88
All capacity groups	6.80	3.15	46.3	3.65

REGION 8—INDIANA AND ILLINOIS

Under 10,000	\$5.84	\$2.80	47.9	\$3.04
10,000 to 24,999	5.61	2.75	49.0	2.86
25,000 to 39,999	5.30	3.04	57.4	2.26
40,000 to 59,999	6.51	3.23	49.6	3.28
60,000 to 99,999	7.08	3.15	44.5	3.93
100,000 to 199,999	5.94	2.53	42.6	3.41
200,000 to 499,999	5.99	2.48	41.4	3.51
All capacity groups	6.03	2.73	45.3	3.30

REGION 9.—IOWA AND MISSOURI

Under 10,000	\$5.45	\$2.54	46.6	\$2.91
10,000 to 24,999	6.07	2.74	45.1	3.33
25,000 to 39,999	7.02	3.29	46.9	3.73
40,000 to 59,999	5.72	3.15	55.1	2.57
60,000 to 99,999	5.79	2.79	48.2	3.00
200,000 to 499,999	6.51	2.74	42.1	3.77
All capacity groups	6.32	2.89	45.7	3.43

REGION 10.—MINNESOTA, WISCONSIN, AND MICHIGAN

Under 10,000	\$6.08	\$3.22	53.0	\$2.86
10,000 to 24,999	6.25	3.15	50.4	3.10
25,000 to 39,999	6.96	3.19	45.8	3.77
40,000 to 59,999	7.39	3.14	42.5	4.25
60,000 to 99,999	6.58	3.61	54.9	2.97
All capacity groups	6.67	3.31	49.6	3.36

Average figures for 108 hatcheries in region 1 showed a slight indication that costs were higher for large hatcheries than for small ones, although the tendency for costs to increase as the size of hatcheries increased was not regular. Hatcheries with a capacity of less than 10,000 eggs had the lowest cost, and hatcheries with capacities from 100,000 to 200,000 had the highest cost. The egg cost showed a wide variation from one size group of hatcheries to another. These variations, however, did not appear to be related to the size of the hatcheries.

The average costs for region 2 were based on reports from 52 hatcheries. There did not appear to be any significant relationship between costs per hundred chicks and the size of hatcheries. In this region costs were generally much lower than in region 1, and the costs in one capacity group as compared to another did not show the extreme variations noticed in region 1.

Average costs for region 3 were based on reports from 48 hatcheries. No hatchery in this group had a capacity greater than 60,000. In the South, hatcheries generally are much smaller than in other regions. There did not appear to be much relationship between costs and the size of hatcheries here. Egg costs in this region were in all cases higher than in the South Central States.

The 55 hatcheries reporting in region 4 showed the lowest hatching costs in the country. In this region there appeared to be a distinct tendency for costs to decrease as the size of the hatcheries increased. This tendency was not due to the egg cost but to the other elements of cost which showed a similar tendency to decrease as the size of the hatcheries increased. One of the main reasons for the lower hatching costs in this region was that average egg costs were considerably lower than in most of the other regions.

Reports from the 66 hatcheries in region 5 indicated that total costs were higher here than in any other region. This was due to extremely high cost of eggs. The costs in this region for hatcheries of different sizes showed more variation than in any other region. This variation, however, showed no consistent relationship to the size of the hatcheries. The highest cost in this region was reported by hatcheries with capacities from 25,000 to 40,000, and the lowest cost by hatcheries with capacities from 60,000 to 100,000. Apparently in the New England region and New York the larger hatcheries differ considerably from the smaller hatcheries in the character of their business.

Reports from 64 hatcheries were used in the summary of costs for region 6. There appeared to be a tendency for costs to increase to a slight extent as the size of hatcheries increased. This tendency appeared to be due almost entirely to the fact that egg costs per 100 chicks increased as the size of the hatcheries increased. Costs of hatcheries with a capacity up to 60,000 were quite uniform. However, the hatcheries in the largest capacity group showed a considerably higher cost than smaller hatcheries, which was accounted for by higher egg costs.

Average figures for 72 hatcheries in Ohio (region 7) indicated that hatching costs showed only a moderate variation from one capacity group to another. There did not appear to be any significant relationship between the cost of hatching and the size of the hatchery.

Hatching costs reported by the 66 hatcheries in region 8 were the second lowest in the country. There was considerable variation in

costs from one capacity group to another, but again the variation did not appear to be related to the size of hatcheries. The egg costs were generally very low and particularly in the case of hatcheries with more than 100,000 capacity.

Average cost figures for 92 hatcheries in region 9, as in a good many of the other regions, showed quite a bit of variation from one capacity group to another, but this variation similarly could not be related to the size of the hatcheries. The highest egg cost was shown by hatcheries with capacities from 25,000 to 60,000.

Reports from 53 hatcheries in region 10 indicated that the hatcheries in the smallest capacity group had the lowest costs and that hatcheries with capacities from 40,000 to 60,000 had the highest cost. The largest hatcheries in this region, however, showed a considerably lower cost than the cost shown by hatcheries with capacities from 25,000 to 60,000. There was, therefore, no logical relation between costs and the size of hatcheries. The egg costs for hatcheries of different sizes appeared to be quite uniform.

The figures on the cost of hatching shown in this table differ in some details from the cost figures previously shown. Whereas all previous cost figures were based on reports received from 683 hatcheries, these figures are based on reports of only 676 hatcheries. The reports from seven of the largest hatcheries were excluded in the calculation of the cost figures shown here. It was necessary to exclude the reports of these seven large hatcheries because otherwise some of the averages shown in these tables would have to be based only on reports from one or two hatcheries. With these seven hatcheries excluded, however, no average here presented is based on fewer than three reports. The exclusion of the seven large hatcheries accounts for the differences in the cost figures as here given from the ones previously presented.

Regions 1 and 6 showed a decided tendency for costs to increase as the size of hatcheries increased. In region 6, this appeared to be due to the fact that egg costs increased with the size of hatcheries, but this was not true in the case of region 1.

Region 4 was the only one where the tendency was pronounced for costs to decrease as the size of the hatcheries increased. In all of the other regions, there did not appear to be any consistent relationship between hatching cost and the size of hatcheries. In some instances, small hatcheries had the highest cost; in other instances, large hatcheries had the highest cost; and in several instances, middle-sized hatcheries had the highest cost.

As far as egg cost is concerned, it appears that the variation from one capacity group to another within any one region was never very great. However, variation in egg cost from region to region was considerable. All other costs, on the other hand, showed a tendency to vary to a greater extent from capacity group to capacity group in any one region than from one region to another.

A METHOD OF ESTIMATING THE COST OF PRODUCING CHICKS

In many instances, the smaller hatcheries do not keep adequate records and are unable to determine their cost of producing chicks. All hatcheries, however, should know how much they paid for their hatching eggs and how many chicks were hatched from these eggs.

With such information, every hatchery is in a position to know fairly accurately its egg cost per hundred chicks.

The cost of eggs can be easily determined by multiplying the price paid per dozen for hatching eggs by 8.3 to get the price per hundred eggs. If the price of hatching eggs, for example, is 30 cents per dozen, the price per hundred will be 30 cents \times 8.3, or \$2.49. This \$2.49 per hundred eggs, however, does not represent the egg cost of hatching 100 chicks, because on a commercial basis not all of the eggs set will hatch into salable chicks. Let us furthermore suppose that for every hundred eggs set only 60 salable chicks are hatched. The cost of a hundred eggs, therefore, must be adjusted by the percentage of hatchability which, in this case, is 60 percent. To do this, the cost of a hundred eggs, which in this case is \$2.49, must be divided by 0.60 in order to arrive at the actual egg cost per hundred chicks. Dividing \$2.49 by 0.60, we get an egg cost of \$4.15 per hundred chicks.

Now the problem still remains to determine what are all other costs in addition to the egg cost. Of course, even many of the small hatcheries have some expense records from which they can estimate their costs. It is essential, however, that such items as depreciation, wages for family labor, and rent on privately owned property be included along with the more obvious expenses. On the other hand, in those cases where the hatcheryman also custom hatches and broods chicks, it is important to make a proportionate allowance for expenses incurred in connection with such operations.¹²

Too many hatcheries, however, keep such inadequate records that they are not in a position to know what their other costs are. Such hatcheries may find table 33 very helpful. This table shows the egg cost per hundred chicks expressed as a percentage of total cost. These averages were computed from the cost records of many hatcheries of different sizes located in the several regions.

TABLE 33.—*Cost of eggs per 100 chicks hatched in 1934—expressed as a percentage of the total cost*

[By 10 regions]

Regions	States comprising the region	Capacity group				
		Under 10,000	10,000 to 24,999	25,000 to 39,999	40,000 to 59,999	60,000 to 99,999
1	California, Oregon, Washington, Idaho, Nevada, Arizona, Utah, Wyoming, Montana.....	53.6	54.1	54.8	48.0	58.8
2	New Mexico, Texas, Oklahoma, Arkansas, Louisiana.....	40.5	42.6	45.9	41.8	34.4
3	Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Florida.....	51.0	51.5	55.9	54.5	-----
4	North Dakota, South Dakota, Nebraska, Kansas, Colorado.....	46.7	45.5	45.3	47.8	52.3
5	Maine, Massachusetts, Vermont, New Hampshire, Rhode Island, Connecticut, New York.....	54.9	59.3	69.3	46.4	50.7
6	Delaware, New Jersey, Pennsylvania, District of Columbia, Virginia, Maryland, West Virginia.....	55.7	55.3	55.7	57.9	-----
7	Ohio.....	50.8	48.9	51.2	46.9	47.1
8	Indiana, Illinois.....	47.9	49.0	57.4	49.6	44.5
9	Iowa, Missouri.....	46.6	45.1	46.9	55.1	48.2
10	Minnesota, Wisconsin, Michigan.....	52.7	50.4	45.8	42.5	54.9

Suppose that the hatchery referred to in our illustration is located in the State of Alabama and has a setting capacity of 12,000 eggs.

¹² Method explained in section on Cost of Custom Hatching.

It has already been determined that its egg cost is \$4.15 per hundred chicks.

Turning to table 33, we find that Alabama is in region 3, and that the percentage of egg cost to total cost for hatcheries with capacities of from 10,000 to 25,000 is shown in the second column. The egg cost in this instance is 51.5 percent of total cost. Therefore \$4.15 represents approximately 51.5 percent of the total cost of hatching in the case of this hatchery. In order to arrive at the total cost, it is necessary, then, to divide \$4.15 by 0.515, which will give us an estimated total cost of \$8.06.¹³

To this figure, the hatcheryman should, of course, add a reasonable allowance for profit.

It must be realized, however, that at best such an estimate can only be approximately correct. No doubt it is much better than mere guesswork, but it is indeed a poor substitute for carefully kept records.

COST OF CUSTOM HATCHING

Many hatcheries, in addition to regular commercial hatching, also do a considerable amount of custom hatching for hire. This in effect amounts to renting the incubator equipment and the technical services to poultry producers who have their own eggs and who desire to have these eggs hatched. As a rule, the hatcheryman assumes no responsibility beyond taking the eggs delivered to him by the customer, placing them in the incubator, managing the incubator during the period of incubation, and returning to the customer the chicks hatched from the eggs delivered.

Such operations by the hatchery necessarily involve certain costs, but do not involve other costs which are chargeable only to commercial hatching. A hatchery doing both commercial and custom hatching must apportion its costs in some equitable manner between the commercial and custom hatching phases of its business.

In determining the percentage of costs which should be charged against custom hatching operations, it is necessary in the first place to deduct from total cost, in the case of a particular hatchery, such items as may have nothing to do with custom hatching. The deducted items usually include the cost of eggs, the cost of chick replacements, flock improvement, chick advertisements, and delivery expenses. If the custom-hatched chicks are delivered to the owners, it is then, of course, necessary to consider part of the delivery expenses as a part of custom hatching costs.

When these items are deducted from total costs, the remaining costs, as a rule, represent labor and overhead items. A certain percentage of these labor and overhead expenses must be charged against custom hatching. This is the percentage that eggs set for custom hatching is to the total number of eggs set. This percentage should be applied to the expense items chargeable against custom hatching, and the amount of such expense so determined.

Let us take, for example, a small typical hatchery with total costs for the year of \$510. Like many others, this hatchery, in addition to hatching chicks both commercially and for custom hire, also deals

¹³ This procedure can, of course, be repeated for any hatchery. For instance, a hatchery located in Connecticut, which pays 42 cents for eggs and has a 58-percent hatchability, would have an egg cost of \$6.02 per hundred chicks, and, assuming that this hatchery had a capacity of only 9,000 eggs, its total cost would be \$10.97 per hundred chicks.

in poultry supplies. Ten dollars out of the total \$510, we will say, represents the cost of such supplies, and therefore should be subtracted from the total at the beginning. The remaining \$500 represents the total costs involved in the hatching of chicks. Of this sum, the cost of eggs represents \$220, and all other expenses which are chargeable only against commercial hatching add up to \$30 more. This means that \$250 must be deducted from the total hatching costs before any consideration is given to custom hatching. The remaining \$250 represents primarily labor and overhead costs and must be apportioned between custom and commercial hatching.

Let us say that this hatchery has set 10,000 eggs altogether during the hatching season, and that 2,000, or 20 percent of this amount, were set for custom hatching. We will then apply this 20 percent to the \$250, which is that portion of expenses a part of which is chargeable against custom hatching, and this will give us \$50 which should be charged against the 2,000 eggs set for custom hatching. This makes the cost of custom hatching \$2.50 per hundred eggs set.

Table 34, which shows the cost of custom hatching for hatcheries by regions, and table 35, which gives the same data for hatcheries of different sizes, were compiled from records of individual hatcheries. The figures presented are simple averages of individual costs of custom hatching. They are not weighted, and this, of course, carries with it an implied assumption that no single cost figure computed from the records of any one hatchery carries more importance than other cost figures computed from records of other hatcheries.

TABLE 34.—Average cost of custom hatching per 100 chicks in 1934

[By 10 regions]

Region	Average custom hatching cost per 100 chicks	Ranges within which the costs of approximately $\frac{2}{3}$ of the reporting hatcheries fall	Region	Average custom hatching cost per 100 chicks	Ranges within which the costs of approximately $\frac{2}{3}$ of the reporting hatcheries fall
1.....	\$2.24	\$1.24-\$3.24	7.....	\$2.01	\$1.19-\$2.83
2.....	2.44	1.67- 3.21	8.....	1.92	1.21- 2.63
3.....	2.26	1.38- 3.14	9.....	1.90	1.23- 2.57
4.....	2.05	1.34- 2.76	10.....	2.02	1.39- 2.65
5.....	2.18	1.29- 3.07			
6.....	1.85	1.18- 2.52	All regions.....	2.07	1.32- 2.82

For all of the hatcheries included in this report, the cost of custom hatching 100 eggs was, on the average, \$2.07. There was, however, considerable variation in the cost of custom hatching from one hatchery to another. When these costs were calculated for each individual hatchery doing custom hatching, it was found that the costs of approximately two-thirds of the hatcheries varied from \$1.32 to \$2.82 per 100 eggs set. The costs of the remaining one-third were either below \$1.32 or above \$2.82. It is, therefore, important to realize this limitation of the average cost of custom hatching if one is not to be misled by it.

There also appeared to be some variation in the cost of custom hatching from one region to another. The highest costs were found in regions 2 (South Central States), 3 (Southeastern States), and 1 (Pacific coast and far Western States), where labor costs were fairly

high. The lowest costs were in regions 6 (North Atlantic States), 9 (Iowa and Missouri), and 8 (Illinois and Indiana), which had relatively low labor costs. On the other hand, region 5 (New York and the New England States), which had the lowest labor cost in the country, showed a fairly high custom hatching cost. In this connection, it was perhaps important to note that in region 5 not very much custom hatching was done and that the averages as presented for region 5 were based on very few reports.

The widest range of variation in individual costs was found in region 1. Region 10 (Wisconsin, Michigan, and Minnesota) showed the narrowest range of variation.

TABLE 35.—Average cost of custom hatching per 100 chicks in 1934

[By capacity classes]

Capacity group	Average custom hatching cost per 100 chicks	Ranges within which the costs of approximately $\frac{2}{3}$ of the reporting hatcheries fall	Capacity group	Average custom hatching cost per 100 chicks	Ranges within which the costs of approximately $\frac{2}{3}$ of the reporting hatcheries fall
Under 10,000.....	\$1.95	\$1.18-\$2.72	100,000 to 199,999.....	\$2.07	\$1.48-\$2.66
10,000 to 24,999.....	2.07	1.29- 2.85	200,000 to 499,999.....	2.42	1.90- 2.94
25,000 to 39,999.....	2.06	1.37- 2.75	500,000 and over.....	(1)	(1)
40,000 to 59,999.....	2.12	1.37- 2.87			
60,000 to 99,999.....	2.11	1.35- 2.87	All capacity groups.....	2.07	1.32- 2.82

¹ Sample inadequate.

There was some indication that the largest hatcheries had the highest costs of custom hatching and the smallest hatcheries the lowest costs. However, these costs could not be consistently related to the size of hatcheries. The small hatcheries showed a wider range of variation in individual costs than the large ones.

THE MARGIN OF PROFIT IN THE HATCHERY INDUSTRY

Many hatcheries, in addition to hatching chicks for sale, also engage in a number of supplementary activities. For example, they may do custom hatching or they may deal in hatching eggs, poultry supplies, and feed. It is, therefore, essential to distinguish between profits resulting from complete hatchery operations, including such details as the sale of supplies and feed, and profits which are made only from commercial chick hatching.

Reports received from 683 hatcheries located throughout the country indicate that, on the whole, the 1934 hatching season was rather profitable. Table 36 shows that 600 hatcheries, or 88 percent, reported profits on their operations, while only 83 hatcheries reported losses.

Regions 6, 1, and 4 reported a higher percentage of hatcheries making a profit than any of the other regions, while region 2 reported the lowest percentage of hatcheries making a profit. As far as the size of the hatcheries is concerned, it appears that the greatest percentage of hatcheries making a profit is found in the smallest capacity group, and that the smallest percentage of hatcheries making a profit is found in the capacity group from 60,000 to 100,000.

TABLE 36.—*Percent of 683 hatcheries reporting a profit for the 1934 hatching season*
[By 10 regions and capacity classes]

Region	Percent of hatcheries reporting profit	Capacity groups	Percent of hatcheries reporting profit
1.....	93	Under 10,000.....	92
2.....	75	10,000 to 24,999.....	87
3.....	81	25,000 to 39,999.....	88
4.....	93	40,000 to 59,999.....	89
5.....	85	60,000 to 99,999.....	72
6.....	95	100,000 to 199,999.....	87
7.....	89	200,000 to 499,999.....	86
8.....	89	500,000 and over.....	(¹)
9.....	85		
10.....	87		
All regions.....	88	All capacity groups.....	88

¹ Sample not adequate.

PROFIT ON COMPLETE HATCHERY OPERATIONS

An analysis of gross income on complete hatchery operations, which includes income derived from the sale of poultry supplies, feed, and other items, as well as income from hatching chicks, indicates that the average margin of profit on such operations was 15.4 per cent for the 1934 season. This means that out of every \$100 received by these hatcheries, on the average, their total expense amounted to \$84.60 and that their profit margin was \$15.40. (Table 37).

TABLE 37.—*Total expense and margin of profit as percentages of gross income from all hatchery operations in 1934 for 683 hatcheries*
[By 10 regions]

Region	Gross income from all hatchery operations	Total expense	Margin of profit
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
1.....	100	88.6	11.4
2.....	100	85.5	14.5
3.....	100	86.2	13.8
4.....	100	80.5	19.5
5.....	100	77.0	23.0
6.....	100	80.4	19.6
7.....	100	87.6	12.4
8.....	100	86.3	13.7
9.....	100	87.8	12.2
10.....	100	85.8	14.2
All regions.....	100	84.6	15.4

This margin of profit varied considerably among different regions. It was highest in region 5 and lowest in region 1. The margin of profit was also quite high in regions 6 and 4, and quite low in regions 9 and 7.

There appeared to be some tendency for the margin of profit to decrease as the size of the hatchery increased. This tendency was quite consistent except that the largest capacity group, the sample of which consisted of only 3 hatcheries, showed a somewhat larger margin of profit than the hatcheries with capacities of from 100,000 to 500,000.

It should not, however, be taken for granted that small hatcheries in every case also earned a larger return on their invested capital than the large hatcheries merely because as a rule their margin of profit on sales was greater.

TABLE 38.—*Total expense and margin of profit as percentages of gross income from all hatchery operations in 1934 for 683 hatcheries*

[By capacity classes]

Capacity groups	Gross income from all hatchery operations	Total expense	Margin of profit
	Percent	Percent	Percent
Under 10,000.....	100	75.8	24.2
10,000 to 24,999.....	100	81.0	19.0
25,000 to 39,999.....	100	83.5	16.5
40,000 to 59,999.....	100	83.7	16.3
60,000 to 99,999.....	100	84.8	15.2
100,000 to 199,999.....	100	87.9	12.1
200,000 to 499,999.....	100	87.7	12.3
500,000 and over.....	100	85.1	14.9
All capacity groups.....	100	84.6	15.4

Let us consider, for example, two typical hatcheries. Hatchery A is a rather small one, with a capacity of only 8,000 eggs and with a capital investment of \$1,600. Hatchery B is rather large. It has a capacity of 150,000 and a capital investment of \$18,000.

Hatchery A sold 16,000 chicks during the season at \$9 per hundred, while hatchery B sold 300,000 chicks at the same price. This means that hatchery A sold \$1,440 worth of chicks, and if its other sales amounted to \$160, its gross income from all operations was \$1,600. Hatchery B's income from the sale of chicks was then \$27,000, and if its other sales amounted to \$3,000, its gross income from all operations was \$30,000.

It was shown above that, as a rule, small hatcheries earned a larger margin of profit on sales than large hatcheries. Let us, then, say that hatchery A earned a 20 percent margin of profit on its \$1,600 gross sales, or \$320, and that hatchery B earned only 12 percent on its \$30,000 gross sales, or \$3,600. Now, if the investment of hatchery A is \$1,600 and the profit \$320, its return on invested capital is 20 percent. Hatchery B's investment is \$18,000, and, with a profit of \$3,600, the return on invested capital is also 20 percent.

Therefore, notwithstanding a much smaller margin of profit on sales, the large hatchery's return on invested capital was no smaller than the return of the small hatchery.

PROFIT FROM COMMERCIAL CHICK HATCHING

The average profit from commercial hatching only, during the 1934 season, disregarding entirely the profit derived from various supplementary activities of the hatcheries, as indicated by the data submitted by 683 hatcheries and shown on table 39, was 15.7 percent of the selling price. In absolute figures, the average profit for all the hatcheries was \$1.31 per 100 chicks sold.

As in the case of all hatchery operations, so also in the case of commercial hatching only, the hatcheries in region 5 showed a greater average margin of profit than the hatcheries in any other region. The margin of profit was also rather large in region 6. In regions 5 and 6 there are more breeder hatcheries than in any of the other regions. These breeder hatcheries differ considerably in character and type of operation from hatcheries which buy their eggs commercially, and perhaps require larger capital investment, and it is, of course, possible that this fact was to a large extent responsible for a higher margin of profit in these regions.

TABLE 39.—*Selling price, cost of production, and margin of profit per 100 chicks in 1934 for 683 hatcheries*

[By 10 regions]

Region	Average selling price per 100 chicks	Average cost of producing 100 chicks	Average margin of profit per 100 chicks	Percent margin of profit is of selling price
1.....	\$9.39	\$8.54	\$0.85	9.1
2.....	7.40	6.11	1.29	17.4
3.....	8.37	6.88	1.49	17.8
4.....	7.28	5.82	1.46	20.1
5.....	10.12	7.81	2.31	22.8
6.....	8.56	6.83	1.73	20.2
7.....	7.97	6.80	1.17	14.7
8.....	7.15	6.03	1.12	15.7
9.....	7.14	6.31	.83	11.6
10.....	7.49	6.53	.96	12.8
All regions.....	8.33	7.02	1.31	15.7

It will also be observed that in region 1, where the selling price of chicks was second highest, the margin of profit was very low during the 1934 season. Profits were also low in regions 9 and 10, which comprise the States of Iowa, Missouri, Minnesota, Wisconsin, and Michigan.

Table 40, which shows the margin of profit from commercial chick hatching only, by capacity groups, indicates that there was a definite and consistent tendency for profits to decrease as the size of the hatcheries increased.

TABLE 40.—*Selling price, cost of production, and margin of profit per 100 chicks in 1934 for 683 hatcheries*

[By capacity classes]

Capacity groups	Average selling price per 100 chicks	Average cost of producing 100 chicks	Average margin of profit per 100 chicks	Percent margin of profit is of selling price
Under 10,000.....	\$8.95	\$6.72	\$2.23	24.9
10,000 to 24,999.....	8.62	6.80	1.82	21.1
25,000 to 39,999.....	8.15	6.64	1.51	18.5
40,000 to 59,999.....	8.20	6.79	1.41	17.2
60,000 to 99,999.....	8.07	6.83	1.24	15.4
100,000 to 199,999.....	7.63	6.64	.99	13.0
200,000 to 499,999.....	7.77	6.82	.95	12.2
500,000 and over.....	9.85	8.58	1.27	12.9
All capacity groups.....	8.33	7.02	1.31	15.7

To summarize, it may be said (1) that the 1934 season was, on the whole, quite profitable with almost nine-tenths of all reporting hatcheries showing a profit on their operations; (2) that smaller hatcheries as a rule showed a larger margin of profit on gross sales but not necessarily a greater return on invested capital; and (3) that regions 5 and 6, where breeder hatcheries predominate, reported a higher margin of profit than any of the other regions, which may be due to the rather peculiar character of their operations.

APPENDIX

EXHIBIT A.—QUESTIONNAIRE ON THE INTERSTATE CHARACTER OF THE HATCHERY INDUSTRY

1. Do you sell chicks to persons living in States other than the one in which you are located? Yes ----- No -----

(a) If you do, how many chicks did you sell to persons living in States other than the one in which you are located? In 1934 ----- In 1933 -----
In 1929 -----

(b) List the States to which shipments were made-----

2. How many salable chicks did you hatch (exclusive of custom hatching)?
In 1934 ----- In 1933 ----- In 1929 -----

3. How many chicks did you sell within the State in which you are located?
In 1934 ----- In 1933 ----- In 1929 -----

(a) How many were picked up by the customer at your hatchery? In 1934 -----
In 1933 ----- In 1929 -----

(b) How many did you ship to customers located within your own State?
In 1934 ----- In 1933 ----- In 1929 -----

4. Do you buy baby chicks for purpose of resale from hatcheries in States other than the one in which you are located? Yes ----- No -----

(a) If you do, how many did you buy from hatcheries in States other than the one in which you are located? In 1934 ----- In 1933 -----
In 1929 -----

(b) List the States from which such purchases were made-----

5. Do you buy eggs for the purpose of hatching from persons living in States other than the one in which you are located? Yes ----- No -----

(a) If you do, how many dozens did you buy? In 1934 ----- In 1933 -----
In 1929 -----

(b) List the States from which such purchases were made-----

6. Do you sell eggs for hatching purposes to persons living in States other than the one in which you are located? Yes ----- No -----

(a) If you do, how many dozens did you sell? In 1934 ----- In 1933 -----
In 1929 -----

(b) List the States to which shipments were made-----

Name of hatchery

Street address

City

State

Signature

EXHIBIT A-1.—AN ANALYSIS OF REPLIES RECEIVED TO THE QUESTIONNAIRE ON THE INTERSTATE CHARACTER OF THE HATCHERY INDUSTRY

[By 20 regions]

Region	Number of questionnaires sent out	Number of replies received	Percent of replies received	Number of usable replies received	Percent of usable replies received
1.....	113	53	46.90	41	36.28
2.....	124	45	36.29	37	29.84
3.....	140	43	30.71	37	26.43
4.....	80	21	26.25	19	23.75
5.....	49	15	30.61	14	28.57
6.....	75	25	33.33	17	22.67
7.....	103	28	27.18	20	19.42
8.....	130	35	26.92	28	21.54
9.....	143	58	40.56	50	34.97
10.....	167	50	29.94	45	26.95
11.....	152	58	38.16	45	29.61
12.....	120	46	38.33	38	31.67
13.....	141	38	26.95	35	24.82
14.....	93	21	22.58	17	18.28
15.....	125	32	25.60	20	16.00
16.....	120	32	26.67	27	22.50
17.....	197	42	21.32	36	18.27
18.....	104	29	27.88	25	24.04
19.....	87	17	19.54	17	19.54
20.....	88	29	32.95	27	30.68
Total.....	2,351	717	30.50	595	25.31

EXHIBIT B.—QUESTIONNAIRE ON COST OF PRODUCING CHICKS

(Name of firm)

(City)

(State)

GENERAL INFORMATION

- (1) Number of incubators ----- Make ----- Total capacity -----
 Number of incubators ----- Make ----- Total capacity -----
 Number of incubators ----- Make ----- Total capacity -----
 (2) Premium paid per dozen for hatching eggs above local price -----

OPERATING STATEMENT FOR THE YEAR JULY 1, 1933, TO
JUNE 30, 1934

RECEIPTS

- (3) Total income from baby chicks sold ----- \$ -----
 (a) Number of baby chicks sold locally -----
 (b) Number of baby chicks shipped and delivered -----
 (c) Total number of baby chicks sold (a plus b) -----
 (4) Total income from started chicks sold -----
 (a) Number of started chicks sold -----
 (5) Income from sale of eggs (not eggs from home flock):
 (a) Market eggs sold (dozens) ----- Value, \$ -----
 (b) Hatching eggs sold (dozens) ----- Value, -----
 (c) Total income from eggs sold (a plus b) -----
 (6) Total income custom hatching -----
 (a) Number of eggs -----
 (7) Total income from poultry merchandise sold -----
 (8) Income from flock improvement work:
 (a) Income from culling flocks ----- \$ -----
 (b) Income from blood testing -----
 (c) Income from sale of breeding stock -----
 (d) Total income from flock improvement work (a plus b plus c) -----
 (9) Miscellaneous income from hatchery operations (itemize separately):
 (a) ----- \$ -----
 (b) -----
 (c) Total miscellaneous income (a plus b) -----
 (10) Total income (including totals from 3, 4, 5, 6, 7, 8, and 9) -----

EXPENSES

- (11) Eggs purchased:
- (a) Hatching eggs from own flock:
- Number of dozens----- Cost, \$-----
- (b) Hatching eggs from other flocks:
- Number of dozens----- Cost, -----
- (c) Eggs sold as market eggs from other flocks:
- Number of dozens----- Cost, -----
- (d) Total cost of all eggs-----
- (12) Baby chicks or started chicks bought for resale.
- Number----- Cost, -----
- (13) Custom hatching bought. Number of eggs----- Cost, -----
- (14) Total cost of merchandise purchased-----
- (15) Labor:
- | | Total number
hours | Rate per hour | Amount paid
during season |
|--|-----------------------|---------------|------------------------------|
| (a) Management--- | ----- | \$----- | \$----- |
| (b) Incubator operators----- | ----- | ----- | ----- |
| (c) Deliverymen--- | ----- | ----- | ----- |
| (d) Servicemen----- | ----- | ----- | ----- |
| (e) Watchman----- | ----- | ----- | ----- |
| (f) Others----- | ----- | ----- | ----- |
| (g) Total hatchery labor (a to f inclusive)----- | ----- | ----- | ----- |
- (16) Office salaries: Average number of people----- Rate
per hour or month-----
- (17) Office supplies and stationery-----
- (18) Telephone and telegraph-----
- (19) Postage (not parcel post on chicks sold or bought)-----
- (20) Rental charge (on privately owned or on leased property)-----
- (21) Insurance-----
- (22) Taxes-----
- (23) Interest-----
- (24) Bad debts-----
- (25) Replacements (cash and value of chicks used to adjust claims)-----
- (26) Dues and subscriptions-----
- (27) Heat, light, water, and power-----
- (28) Printing and other advertising expense-----
- (29) Shipping charges-----
- (30) Operating expense of auto and truck as used in business-----
- (31) Other travel expense for hatchery-----
- (32) General repairs (equipment and buildings)-----
- (33) Hatchery and shipping supplies (boxes, staples, etc)-----
- (34) Expense for flock improvement work (not including expense
for your poultry farm):
- (a) Expense of culling flocks----- Cost, \$-----
- (b) Expense of blood testing----- Cost, -----
- (c) Expense of breeding stock, including chicks----- Cost, -----
- (d) Total flock improvement (a plus b plus c)-----
- (35) Miscellaneous expense for hatching operations
(itemize separately):
- (a)----- \$-----
- (b)-----
- (c) Total miscellaneous expense (a plus b)-----
- Total expense (items 11 to 35 inclusive)-----

The statements given above are true to the best of my knowledge and belief.

(Signature)

(Address)

EXHIBIT B-1—QUESTIONNAIRE ON COST OF PRODUCING CHICKS

(Name of firm)

(City)

(State)

BALANCE SHEET

(1) As of July 1, 1933

ASSETS

- | | | | |
|---|--------------------|----------------------|---------|
| (2) Cash on hand and in bank to hatchery account..... | | | \$..... |
| (3) Notes and accounts receivable..... |  |  | ..... |
| (4) Inventories: | | | |
| Eggs and chicks..... | | | \$..... |
| Started chicks..... |  |  | ..... |
| Merchandise..... |  |  | ..... |
| Supplies..... |  |  | ..... |
| Total inventories..... |  |  | ..... |
| (5) Value of securities (at par or market price, whichever is lower)..... |  |  | ..... |
| (6) Land..... |  |  | ..... |
| (7) Buildings and equipment: ¹ | <i>Description</i> | <i>Date acquired</i> | |
| Hatchery buildings..... | ..... | ..... | \$..... |
| Brooder buildings..... | ..... | ..... | ..... |
| Hatchery equipment..... | ..... | ..... | ..... |
| Brooder equipment..... | ..... | ..... | ..... |
| Delivery equipment..... | ..... | ..... | ..... |
| Office equipment..... | ..... | ..... | ..... |
| Total buildings and equipment..... |  |  | ..... |
| (8) Other assets: (itemize separately) |  |  | ..... |
| | | | |
| | | | |
| Total assets..... |  |  | ..... |

LIABILITIES

- | | | |
|--|-----------------------------|-------|
| (9) Accounts payable | _____ | _____ |
| (10) Notes payable—banks | _____ | _____ |
| (11) Notes payable—equipment | _____ | _____ |
| (12) Other notes and mortgages | _____ | _____ |
| (13) Accrued interest payable | _____ | _____ |
| (14) Accrued taxes | _____ | _____ |
| (15) Other liabilities: (itemize separately) | _____ | _____ |
| | _____ | _____ |
| (16) Net worth: | | |
| Capital | _____ \$ _____ | |
| Surplus | _____ | |
| | <u> </u> | |
| | Total net worth | _____ |
| (17) Total liabilities plus net worth | _____ | _____ |
| Remarks | _____ | |

Remarks_____

The statements given above are true to the best of my knowledge and belief.

(Signature)

(Address)

¹ If buildings were constructed and equipment bought at different times, designate exact time and cost under remarks.

EXHIBIT B-2—QUESTIONNAIRE ON COST OF PRODUCING CHICKS

(Name of firm)

(City)

(State)

BALANCE SHEET

(1) As of June 30, 1934

ASSETS

- (2) Cash on hand and in bank to hatchery account..... \$.....
- (3) Notes and accounts receivable.....
- (4) Inventories:
- | | |
|------------------------|---------|
| Eggs and chicks..... | \$..... |
| Started chicks..... | |
| Merchandise..... | |
| Supplies..... | |
| <hr/> | |
| Total inventories..... | |
- (5) Value of securities (at par or market price, whichever is lower).....
- (6) Land.....
- (7) Buildings and equipment:¹
- | Description | Date acquired |
|------------------------------------|---------------|
| Hatchery buildings..... | |
| Brooder buildings..... | |
| Hatchery equipment..... | |
| Brooder equipment..... | |
| Delivery equipment..... | |
| Office equipment..... | |
| <hr/> | |
| Total buildings and equipment..... | |
- (8) Other assets: (itemize separately).....
-
-
-
- Total assets.....

LIABILITIES

- (9) Accounts payable.....
- (10) Notes payable—banks.....
- (11) Notes payable—equipment.....
- (12) Other notes and mortgages.....
- (13) Accrued interest payable.....
- (14) Accrued taxes.....
- (15) Other liabilities: (itemize separately).....
-
- (16) Net worth:
- | | |
|----------------------|---------|
| Capital..... | \$..... |
| Surplus..... | <hr/> |
| Total net worth..... | |
- (17) Total liabilities plus net worth.....
- Remarks:
-

The statements given above are true to the best of my knowledge and belief.

(Signature)

(Address)

¹ If buildings were constructed and equipment bought at different times, designate exact time and cost under Remarks.

EXHIBIT B-3—AN ANALYSIS OF REPLIES RECEIVED TO THE QUESTIONNAIRES ON COST OF PRODUCING CHICKS

[By 10 regions]

Region	Number of hatcheries on mailing list	Replies to questionnaire	Percent of replies to number of hatcheries	Reports used	Percent of reports used to replies	Percent of reports used to names on list
1	1, 185	517	43. 6	110	21. 3	9. 3
2	952	337	35. 4	52	15. 4	5. 5
3	646	259	40. 1	48	18. 5	7. 4
4	1, 204	362	30. 1	55	15. 2	4. 6
5	1, 401	529	37. 8	68	13. 0	4. 9
6	1, 273	422	33. 2	64	15. 2	5. 0
7	831	260	31. 3	72	27. 7	8. 7
8	1, 209	347	28. 7	66	19. 0	5. 5
9	1, 329	466	35. 1	93	20. 0	7. 0
10	1, 375	366	26. 6	55	15. 0	4. 0
Total	11, 405	3, 865	33. 9	683	17. 7	6. 0

EXHIBIT B-4—AN ANALYSIS OF REPLIES RECEIVED TO THE QUESTIONNAIRES ON COST OF PRODUCING CHICKS

[By capacity groups]

Capacity groups	Number of hatcheries on mailing list	Replies to questionnaire	Percent of replies to number of hatcheries	Reports used	Percent of reports used to replies	Percent of reports used to names on list
Under 10,000	4, 934	2, 009	40. 7	208	10. 4	4. 2
10,000 to 24,999	3, 315	1, 016	30. 6	216	21. 3	6. 5
25,000 to 39,999	1, 274	355	27. 9	99	28. 2	7. 8
40,000 to 59,999	895	212	23. 7	73	34. 4	8. 2
60,000 to 99,999	576	158	27. 4	47	29. 7	8. 2
100,000 to 199,999	294	76	25. 9	23	30. 3	7. 8
200,000 to 499,999	102	34	33. 3	14	41. 2	13. 7
500,000 and over	15	5	33. 3	3	60. 0	20. 0
Total	11, 405	3, 865	33. 9	683	17. 7	6. 0